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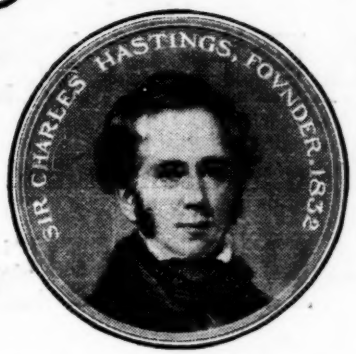

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BY

HUGH THURSFIELD, M.D., F.R.C.P.,

PHYSICIAN, HOSPITAL FOR CHILDREN, AND ASSISTANT PHYSICIAN, ST. BARTHOLOMEW'S HOSPITAL, LONDON.

THERE is an old philosophical doctrine of the meaning of the universe expressed in the words Πάντα ῥεῖ—everything is in a state of flux; nothing is stable. That is true of life in general and of human life in particular. Growth and development, degeneration and decay, are inevitable laws of Nature as we say—that is, these processes represent in our experience the recurring phenomena of life without a known exception. In our own department of the study of the phenomena of human life, in medicine, when we deal with the adult our principal business is the appreciation of the processes which lead to degeneration and decay, and we endeavour to influence conditions in such a fashion as to retard the operation of the inevitable law. But in the study of the infant and the child our attention is to a large degree concentrated on the opposite principle, the law which governs growth and development.

Till the middle of the nineteenth century our knowledge remained much as it had been in all the previous centuries of man's existence, but with the promulgation of the doctrine of evolution and natural selection an immense stimulus was given to the study of the development of the human being. New fields of investigation were opened and the modern science of physiology began to provide the ancient art of healing with new ideas. The results of the study of the thyroid gland introduced us to the functions of the glands of internal secretion, and speculations on the nature of inherited qualities and their transmission stimulated research into the origins of growth and development.

When we ask why the infant grows and develops, the answer which our present knowledge must give is that there are two principal factors: one the inherent stimulus which is common to all young life, which we recognize as a law of Nature; this we can analyse to a certain degree, and perhaps we may succeed in time in modifying it consciously in human life as we have succeeded in the vegetable and animal kingdoms. Eugenics is the branch of science which seeks this end. The other factor, over which we gain more control as time passes and knowledge increases, may be called the external factor, the law that growth cannot occur without a supply of the material which is to be built into the growing tissues, and even so can occur normally only if the material supplied is properly distributed and regulated by the various structures which we have learnt to regard as governing growth. These governing structures are the glands of internal secretion, and our knowledge of them, though it increases, is still pitifully small.

We can therefore recognize two spheres in which we can attempt to control growth—the ante-natal period and the period of growth after birth; and two factors which between them determine the nature and the course of growth—the glands of internal secretion, and the material supplied to them. It is obviously in the period after birth and in the nature of the material supplied that our best opportunity lies of influencing the development of the infant; but the ante-natal period is of increasing importance, and in one direction at least we have gained a measure of control over the ductless glands. The field thus sketched out is clearly far too wide for a comprehensive review, and I propose to select a few points in it for consideration.

THE ANTE-NATAL PERIOD.

Congenital defects have always attracted much attention, but our knowledge of their causation is singularly small. Many of these defects are local and apparently the result of some aberrant impulse in the inherent principle of growth. A good example is the congenital abnormality of the heart, or the congenital absence of some bone such as the radius. Some such events we classify under "atavism" or "reversion to type"—phrases which may help us to grasp the exceeding complexity of the human body as it exists at the present time, but throw no light on the stimulus which provokes the reversion. Such events we neither understand nor can attempt to control. On the other hand, we know that tuberculosis or alcoholism in the parents leads to a high percentage of mental deficiency in the offspring; and that a disease such as syphilis can be transmitted to the unborn child. Yet when we have counted all the recognized factors which influence the development of the foetus we are left with the great bulk of congenital abnormality wholly unexplained. We do not in the least understand why one of a pair of twins should be a Mongolian idiot, and the other a normal child; or why one child in a long family should be born with achondroplasia. You will be able to recall dozens of other examples in which as yet our knowledge is absolutely nothing. But we know enough of the facts of inheritance to be able to predict the probability of haemophilia in a given family; and we have mastered therapeutics sufficiently to secure that the child of a mother who was herself born a cretin should be a normal individual. Again, recent experimental work, to which I shall recur, seems to point to the fact that the absence or deficiency of certain elements of food in the diet of the pregnant or nursing mother has a marked influence on the growth and development of the offspring, and especially upon its skeleton.

But in the ante-natal period there remains a vast mass of unknown, unguessed-at factors which can only very slowly be revealed by the advance of eugenic study and the knowledge derived from researches on inheritance in animals and plants. Meanwhile, we in this generation must be content to do the recording and the classification so that the date of the revelation of the underlying principles may be hastened.

THE PERIOD AFTER BIRTH.

Physiology deals with the function of the living organism, and its most obvious field of research is that which includes the supply of material to the increasing tissues; and though we know that growth may be stimulated by other factors of environment, such as air, light, and exercise, yet the quantity and quality of the food clearly holds the first place. Physiology early established the normal curves of infant growth and engaged in the task of analysing the quantities and qualities of the known chemical elements which go to the building up of the tissues.

Vitamins.

Towards the end of the nineteenth century it had become clear that besides the proteins, fats, carbohydrates, and mineral salts which compose the essential chemical elements of food there must be other, hitherto unrecognized, substances essential to life. This was, of course, not a new idea—it had long been familiar to clinicians brought into contact with cases of scurvy; but the hypothesis was not accepted by all clinicians and was far from proof. Physiology sought the proof by the method of exclusion from the diet of everything except the recognized chemical elements. There was an interval before they were able to reach the desired standard of purity, but in the first decade of this century Hopkins at Cambridge was able to demonstrate conclusively that a diet of standard purity, though complete in quantity and quality as recognized by chemical analysis, was insufficient to maintain growth, and if continued led to death, usually from intercurrent infection. I need not detain you with the subsequent history. I will merely remind you that it is now established that over and beyond the recognized chemical elements of food there are three accessory food factors, or vitamins—fat-soluble A, water-soluble B, and the antiscorbutic factor C. Whether there are others than these is undecided. McCollum and his fellow workers at one time considered that fat-soluble A really contained two separate elements—one necessary to growth, the other necessary for the normal production of bone. More recently they have claimed the existence of a fourth vitamin, D, which is antirachitic, but at present the

* Delivered before the Guildford Division of the British Medical Association on April 12th, 1923.

claim is not substantiated. It is possible that other vitamins exist, but with our present knowledge it is not very probable.

The discovery of these accessory food factors is of the first importance in our study of the disorders of growth. It is clear that no normal growth can occur in their absence, but we do not yet know clearly what are the effects of a mere deficiency in quantity. Nor shall we know this with accuracy until the efforts of the physiologists have succeeded in isolating the vitamins and determining their actual composition.

Vitamin C.—However, with vitamin C, the antiscorbutic factor, some progress in this direction has been made, and it is possible to estimate the quantity per kilo of body weight of orange juice or cabbage juice necessary to protect a guinea-pig against scurvy. In the infant it has long been known to clinicians that the effects of a scurvy-producing diet require some time to show themselves and that there are degrees of severity in their manifestations. With our knowledge of vitamin C some of this variability is explained. The milder cases and those which develop only after a long course of the scurvy-producing diet are presumably those in which antiscorbutic is not wholly absent but is present in insufficient quantity. And in those cases which are severe or develop after an extremely short interval of the scurvy diet the factor is presumably absent altogether. But clinical observation, stimulated by such considerations, has gone further, and Hess and others have shown that there is what we may call a latent or subacute scurvy which has not hitherto been recognized. There is a group of infants of from 3 to 6 months of age in which growth is defective, irritability pronounced, and there is obvious pain on handling. If such an infant is supplied with orange juice in good quantity these symptoms almost at once disappear and normal growth is resumed. Such infants have usually been fed either on food which is notoriously defective in antiscorbutic quality or breast-fed by mothers whose own diet has been similarly defective. I have in the past year seen two such cases, and the result of the addition of antiscorbutic to their food is striking. I think that besides the obvious haemorrhagic disorder of the older infants we must recognize the existence of a milder and less obvious scurvy which may attack the infant in the early months of life. We must further recognize that the nursing mother, though in normal circumstances amply supplied with vitamin C and able to transmit it to her infant, may be so situated that her own supply fails, and that with the failure the infant is exposed to scurvy. The remedy is to secure for every nursing mother an ample supply of the vitamin-containing foods, such as fresh fruit and fresh vegetables. On the whole the dangers of an insufficient supply of vitamin C are well understood; the chief addition to our knowledge is the appreciation of these minor and earlier manifestations in infants, whether fed artificially or by the breast.

Vitamin B.—On the whole, again, vitamin B, the water-soluble factor, seems to be very seldom, so far as our present knowledge goes, a factor in delay of growth. It is present so abundantly in so great a variety of foods, and it is so little affected by cooking processes, that a deficiency in this respect is hardly to be expected. I had hoped that a deficiency in this respect might be the explanation of our failure to deal successfully with some of the cases of infantile atrophy, but all clinicians are united in agreeing that the supply of this factor has no influence on the disorder. Nor have the results of administering yeast to older children suffering from chronic wasting disease been any more satisfactory. The claims of the manufacturers of patent foods may in this respect be entirely disregarded.

Vitamin A.—It is round the fat-soluble vitamin A that the greatest controversy rages and the most doubt exists. It is clear from the experimental work that without vitamin A growth fails; and it is also clear that if vitamin A is absent or deficient normal calcification of bone cannot take place. But it is also becoming clear that a failure or a deficiency in vitamin A is not the sole cause of rickets. In the controversy which has taken place the contention on the one side has been that rickets is essentially a deficiency disorder, and on the other that it is in the main caused by external conditions, especially by the absence of sufficient light and exercise. There are two facts which appear to me to stand out from the mass of experimental work on this subject: one that it is difficult to produce rickets in an animal who is provided with a proper amount of vitamin A, of calcium, and phosphorus; the other that rickets is apt to be seen in animals whose diet is ample in these respects if the other conditions of their life are unfavourable. From some other experiments it would seem possible that these two apparently irreconcilable facts are in reality corollaries of each other. It would appear, for instance, that if the experimental animal is exposed to light—either sunlight or the light of the mercury vapour lamp—a much smaller amount of vitamin A is sufficient to inhibit the rickety changes in bone than is required by the animal who is brought up in the comparative darkness of the laboratory. Whatever the ultimate outcome of the investigations into the relationship between vitamin A and rickets, it is clear that the clinician must, as he has been doing for many years past, recognize that for his rickety patient an ample supply of animal fats is necessary. Fortunately all the researchers are agreed that cod-liver oil is a substance especially rich in fat-soluble A, so that by the simple addition of this drug to the food of an artificially fed infant the worst manifestations can be avoided.

I emphasized just now the importance to the pregnant or nursing mother of a supply of antiscorbutic factors. It would appear from some recent experimental work that the pregnant mother has also especial need of an ample supply of fat-soluble A. In Korenchevsky's experiments the young rats of two separate litters were weighed on the thirty-sixth day of their lives—both litters had been fed by their mothers and both mother rats had received during lactation exactly the same food. The one mother had, however, during her pregnancy received cod-liver oil in addition to the basal diet which both had; the young of this mother weighed on the average three times more than those of the other litter. Other similar experiments go to prove that a rat mother who is fed during her pregnancy on a diet defective in vitamin A will produce young with defective bone formation, due to a deficiency of calcium in the periosteum, and will herself tend to show a marked thinning of the bones.

Osteogenesis Imperfecta.

It is impossible with these experiments in our minds not to think of that obscure disorder of human growth which is best termed osteogenesis imperfecta. You will remember that there are infants born with so great a tendency to fracture of the bones that life is impossible; that others manage to retain a hold on life but with an extraordinary tendency to fractures and to marked curvature of the long bones; that others, again, with comparatively few fractures yet have bones so thin and slender that violence which would do no damage to a normal individual causes fractures. These various conditions have unfortunately been christened with a great variety of names, so that it is often difficult in reading of them to determine how far they are distinct disorders. My own impression is that there is but one disorder—osteogenesis imperfecta—and that fragilitas ossium, osteopsathyrosis, and infantile osteomalacia are merely varieties of severity. If this is correct I think it possible that Korenchevsky's experiments may indicate the cause of this disorder of growth: a lack of vitamin A during the pregnancy, and possibly a defective supply of calcium and phosphorus. From some other experiments it seems to be possible that the lack of vitamin A is the actual cause of the lack of calcium absorption. At any rate it is obviously the duty of the physician to ensure a good supply of vitamin A to the pregnant mother—an easy task, even when for any reason animal fats are difficult to procure or to digest, for cod-liver oil in quite small quantities contains vitamin A in abundance.

Glands of Internal Secretion.

I have but touched the fringes of the subject in talking of vitamins, but I hope that I have been able to emphasize the great importance of the discovery, and the new field of hypothesis which it has opened. I must pass on to another portion of the subject—the relationship of the glands of internal secretion to growth and development. We are leaving to a large extent the sphere of experimental medicine and entering that of clinical observation, and too often

straying into that of mere surmise. So much has been written and is still being written on the ductless glands that it comes as something of a shock to realize how little we really know, and how much of what we sometimes consider knowledge is in reality nothing more than ingenious speculation. We know something of the influence of the thyroid on growth; less of the pituitary; and still less of the adrenal glands. We know that the interstitial tissue of the sexual glands, the testes and the ovaries, is of great importance for normal development. We believe that the parathyroid and the thymus have an intimate relationship with certain disorders. And we are just now apparently on the edge of conquest of a new sphere of control, in the isolation of the active principle of the internal secretion of the pancreas. I do not wish to enlarge on these topics. I want to turn your attention in a slightly different direction.

We have seen, in considering the subject of vitamins, that if you supply sufficient quantity and quality of food the young animal will grow in a normal fashion. But he will only do so if the glands which control growth are working naturally and in harmony with each other. If there is, for instance, a defect of the thyroid secretion growth will be abnormal; the creature will not cease to grow, but the increasing tissues will be distributed in the body in an abnormal way—the skeleton will develop abnormally; the fatty tissue will be excessive and curiously localized; and the mental powers will be defective. It is as if you had presented an architect with the richest material in proper proportion and asked him to build a shrine, and though he has used the material he has built a deformed and unsightly hovel. So it is also with a defect of the pituitary secretion, and with the victims of a defect of the interstitial tissue of the sexual glands. In the one case the failure of the pituitary architect may produce a "Fat Boy of *Pickwick*"; in the other the failure of the interstitial architect may produce the deformity of the body which we call the "eunuchoid" type. In the case of the cretin we have to a certain extent mastered the secret and can by addition of thyroid extract procure a more or less normal growth; in the hypo-pituitary abnormality we are only tentatively feeling our way; in the "eunuchoid" type there is, so far as I know, as yet no real success.

I want to digress for a moment to speak of the hypo-pituitary type. There is a group of children who exhibit a tendency to become very fat and at the same time to develop the fat especially in the hips, thighs, and abdomen; in addition their genital organs retain the infantile type, and towards puberty they exhibit none of the secondary sexual characteristics. Fröhlich was, I believe, the first to point out that this abnormality was sometimes associated with a tumour of the anterior portion of the pituitary gland, and it is often known as "Fröhlich's syndrome." What is perhaps not so well appreciated is that such a syndrome is often only a temporary phenomenon, and that after a time normal growth is resumed. The presumption is that there is a functional disorder which for a time diminishes the available amount of the necessary internal secretion. I have had some success in treating such children with extracts of the whole pituitary gland. One boy in particular was brought because he could not keep awake either in school or even at his meals. In this, as in his general appearance, he recalled Dickens's description of the Fat Boy. He had no sign of a pituitary tumour, but when placed on extract of the whole gland he became almost normal. He was discharged, but after an interval his father appeared asking for more of the tablets as the only means of keeping him awake. More often, however, therapeutic efforts fail: we do not know enough of the conditions.

In such forms of abnormal growth there is an inherent defect in the functions of the glands of internal secretion, but there are other conditions in which we have reason to suppose that the alteration of the secretion is brought about by factors over which we may learn to gain a degree of control. For example, it is a notorious fact that after some infectious diseases growth may take place with unusual rapidity. After an attack of typhoid fever, for instance, the adolescent may suddenly increase several inches in height; while the adult may become alarmingly stout. On the other hand, there are two diseases of childhood which in my own experience exert the opposite effect. Both diphtheria and tuberculous peritonitis may for a time completely stop growth in height and weight, and I think it is usually a matter of a couple of years before growth is resumed, so that either of these diseases may leave a permanent mark. In these instances I think we are obliged to look for an explanation to some functional disorder of the glands of internal secretion, and I am at present trying the effect of increasing doses of thyroid on one such case, with the result that he has put on a pound a month since he began the drug, whereas for the previous year the total increase had been less than two pounds.

Somewhat in the same category I should feel inclined to place the celebrated case recorded by Byrom Bramwell, in which the addition of pancreatic extract transformed in a year or two a real dwarf into a small but fairly normal individual.

Lastly there is a group which is much less hopeful but which is, from our present standpoint, of great interest—the group of "renal" dwarfs. They were recognized and described by Morley Fletcher in adolescents some years ago and have been written about a good deal since. But quite lately my colleague Donald Paterson has shown that there is a similar group with characteristic lesions in the skeleton, recognizable by *x*-ray examination, occurring in the infant, and I have recently had in my charge a child of 7 years who seems to me to represent another type of the same abnormality. Whether their dwarfism is due to an internal secretion of the kidney, or can more justly be referred to a poisoning of the sources of growth, is a matter which must be left for later research.

There is, of course, much more that could be said on such a subject, but I hope that I have succeeded in sketching the intimate relationships which appear to exist between the materials and the architects: that the architects cannot work without the proper materials, and that improper material may impair the powers of the architect for a short time or even permanently; and that with architects of inferior powers or out of harmony with each other good material may be built into monstrosities.

The Middlemore Lecture, 1922, ON REFRACTION.

DELIVERED AT THE BIRMINGHAM EYE HOSPITAL
BY
T. HARRISON BUTLER, M.D., B.CH.OXON.,
SURGEON, BIRMINGHAM EYE HOSPITAL.

(Abridged.)

DR. RICHARD MIDDLEMORE founded this lecture in order that it might year by year afford the medical men of the Midlands an opportunity to hear the latest views upon an ophthalmic subject of general interest. I therefore do not apologize for selecting refraction as my subject.

The field for refraction is unlimited, and it is quite impossible for ophthalmic surgeons to handle the whole. At the present time the majority of the cases are dealt with either in hospitals or by men who do not possess a medical training. There is no reason why much of this work should not be undertaken by the general practitioner to the advantage of himself and his patient. If he decide to take up refraction he must adopt modern methods and learn retinoscopy.

Refraction cannot be learnt from books, and retinoscopy demands considerable practice. Probably the average man will require three months' constant work in an eye clinic before he attains the necessary accuracy. This period will not be wasted, for both from the standpoint of diagnosis and treatment a working knowledge of ophthalmology, not excluding refraction, is indispensable to the up-to-date physician.

THE OBJECTS OF REFRACTION.

The object of refraction is to make the patient comfortable, not the solution of a problem in optics. Glasses are prescribed to enable an individual to see clearly, and to relieve symptoms caused by errors of refraction and of muscle balance. It does not follow that spectacles which

accurately correct an error will be comfortable; on the contrary, a man may prefer indifferent vision to wearing glasses which he dislikes. In cases of this kind we must temper our desire for optical perfection with common sense. If our patient is quite satisfied with his moderate acuity, and does not suffer from the symptoms of an error of refraction, then he may, if an adult, choose for himself when he will wear his spectacles. We prescribe the glasses to be worn when he wishes for clear vision, and we attain our object, which is to make him physically and psychically comfortable. In the case of a child the conditions are different, and we allow no such latitude. An infant with poor acuity will grow up with unsocial habits and will not develop the habit of observation. He must wear his spectacles constantly.

Symptoms Caused by Errors of Refraction.

The chief and obvious symptom is failure to attain to the normal standard of acuity. Using the ordinary Snellen's test types with the standard illumination this must be taken not as 6/6 but as 6/4.5. In actual practice for all ordinary work 6/12 is sufficient, so if the acuity is 6/12 or better, glasses are not called for in the absence of symptoms due to an error of refraction.

Headache is the next commonest symptom. In every case of headache the eyes should be examined both for refraction error and for disturbance of the normal muscle balance. It does not follow that a refractive error is the cause of the headache nor that its correction will cure the headache. If the spectacles have no favourable influence upon the pain, and if the acuity be good without them, then there is no necessity to wear them. I wish to emphasize the fact that many men and most women object to wearing glasses, and if they are of no use there is no valid reason for employing them. Headache may be due to migraine, to nasal sinusitis, and to many other causes, which may coincide with an error of refraction which is not responsible for the pain.

The degree of error is not proportional to the trouble it causes. In one individual a considerable amount of astigmatism may cause no symptoms, whereas another may suffer agonies from a minimal defect. There are some who possess an abnormal visual acuity—they may be able to read all the letters in the 6/3 line; such are very prone to be inconvenienced by a trivial refractional error. Others, with a highly excitable nervous system, may be relieved from life-long misery by a 0.25 cylinder. We must not, however, allow exceptional cases of this kind to pervert our judgement; in young persons slight astigmatism with the so-called rule, and in the aged against it, is so common that it may be taken as normal, and in most cases causes no symptoms.

Pain in and about the eyes is, after headache, the most frequent complaint. This may be, and in fact often is, due to an abnormality in refraction or muscle balance, but it can be a pure neuralgia. Countless women complain of ocular neuralgia, often associated with pain elsewhere; intercostal neuralgia, rachialgia, coccygodynia, sciatica, and dysmenorrhœa—such are not in the main relieved by glasses; the pain must be treated along ordinary medical lines generally with scant success.

Vertigo, in my own experience, is one of the rare symptoms. It may be caused by muscle imbalance, especially by a high degree of hyperphoria, but the large majority of those who have come to me complaining of giddiness have, if young, been suffering from an aural trouble, and if aged, from circulatory disturbances in the brain.

The essential symptoms of an error of refraction or of muscle balance are: poor acuity, headache, asthenopia, and very occasionally vertigo; but a host of others have been associated with these defects; in fact our American colleagues have given a long list of nervous and even of more general affections which they have treated by correcting errors of refraction. In this connexion we must steer a middle course and not allow enthusiasm to blind common sense. It is doubtless true that an individual of highly neuropathic habit may suffer in various ways from the constant strain of an uncorrected error of refraction, and it is a fact that such may derive benefit from wearing spectacles, at any rate for a time—in some cases from relief of strain, in others from pure suggestion; but, on the other hand, the extravagant lengths reached by some regarding the effects of eyestrain have given rise to much confusion of thought and to not a little frank charlatanism. Every specialty tends to run to extremes and may even approach quackery. The term "eyestrain" has been so much abused in the commercial sense that I prefer to avoid it. There is no doubt that eyestrain exists, but it is not nearly so common as some would have us believe, nor are its effects in the main so baleful as is commonly supposed.

Methods of Determining Errors of Refraction.

The only satisfactory objective method of determining an error of refraction is by retinoscopy; it is the Alpha and Omega of refraction, and a man who is incapable of accurate retinoscopy will never achieve much success in refraction. Accuracy can be attained only by long and constant practice, but much may be done by attention to detail.

The apparatus necessary is of the simplest character: we require an adequate box of accurate trial lenses, a good trial frame, test types correctly illuminated, and a flat retinoscopy mirror. We must work in a room which is at least 20 feet across the diagonal, and we require a small but bright source of light.

Probably few to-day use the concave mirror; it has nothing to recommend it, and in my hands has never yielded accurate results. In many mirrors the hole is too large; I find that 3 mm. gives the best effect, and of all patterns I prefer that designed by Priestley Smith.

The source of illumination should be about the size of a shilling, and having cut down the size we must compensate by using a brilliant light. I think that the best illuminant is paraffin—a lamp with a round wick half an inch in diameter—but electric light is more convenient. I employ a 40 candle-power frosted globe in a Thorington's chimney with an iris diaphragm. This limits the general illumination of the room, and a shaded reading lamp will be convenient to light the box of lenses and the notes. The room should not be completely dark; objects at the end should be visible, otherwise, working without a cycloplegic, it will be impossible to secure full relaxation of accommodation. The old-fashioned dark room is an anachronism; it is better to work in a room with curtains sufficiently thick to obscure but not entirely exclude the light.

The retinoscopist must learn to use both eyes with equal facility, otherwise when a cycloplegic is not employed he cannot refract near the macula, because his head will prevent the patient from fixing an object immediately behind him, and the retinoscopy will be inaccurate. It is essential that the surgeon have good personal acuity, that he may appreciate the tenuous central shadows which alone determine the point of reversal.

In difficult cases it is wise to use cylinders as well as spheres. When the astigmatism has been approximately determined place the appropriate cylinder in the trial frame and alter it till a sphere corrects both meridians simultaneously. This method is very sensitive and is especially valuable when working without a cycloplegic.

Errors in retinoscopy depend almost entirely upon failure to work near the macula. In many eyes the posterior pole is not truly spherical and slight eccentricity in the retinoscopy may introduce an error of a dioptre or more. Generally speaking, retinoscopy should be accurate to within a quarter of a dioptre, but there are cases with scissor shadows and other manifestations of irregular astigmatism in which the limit value is far higher. Corneal nebulae render retinoscopy difficult and often impossible.

If a cycloplegic be used incomplete paralysis of accommodation is a fertile source of error, in fact it may be far greater than we are likely to get without the use of a drug. This has been forced upon my notice in school clinic work, and I have concluded that to obtain certain paralysis of the ciliary muscle in children atropine must be used, and it must be instilled over a period of twenty-four hours. The majority are ready for the test after three instillations spread over two hours, but there are frequent exceptions.

In all cases, except infants who cannot read, the final adjustment will be made with the trial lenses and test types. Intelligent children over 5 years old will give valuable information during the subjective test, in fact they are often more helpful and sensible than some adults. There is a tendency to underrate the intelligence of the child.

When each eye has been examined separately it will often happen that together they will take a stronger convex lens, a fact that has been emphasized by Priestley Smith.

The Use of Cycloplegics.

There is still a wide difference of opinion to what extent we should use cycloplegics in refraction. My own views upon the subject will be found in a paper which I read to the Congress of the Ophthalmological Society in 1922.[1] My practice is to use atropine for young children, but to refract the majority of my patients without cycloplegia.

Cycloplegics are necessary in infants who have not sufficient concentration to fix a distant object, and in cases of spasm of accommodation. Hirschberg tells us that this is one of the rarest of ocular abnormalities, and most ophthalmologists will agree with him. I can only recollect half a dozen cases, and in each the spasm was obvious and detection easy; I am sure that spasm is a bogy. We meet with the ready and powerful accommodation of the young and the irritable action of the ciliary muscle in neurotic persons. Such may not easily accept the full correction of their hypermetropia, but I find that a properly conducted retinoscopy will rarely fail to show the full amount. If the patient will not accept the total correction of hypermetropia as shown by the shadow test, then it is wise to check the result with a cycloplegic. Generally the final result is the same.

Although it is permissible for the experienced to work largely without cycloplegics, the beginner will use them frequently; with increasing practice he will gain confidence and that instinct for spotting the "wrong 'un" which comes from constant association with patients, and he will use drugs less and less. I find that homatropine is not a reliable cycloplegic, and that it frequently gives less hypermetropia than one gets without it. I have found this anomaly after instilling a 2 per cent. solution three times during an hour or more.

In any case, assuming that an occasional error is made by working without a cycloplegic and that no errors accompany its use—a very large assumption—even then I prefer this infrequent lack of accuracy to submitting a large number of my patients to the discomforts of cycloplegia.

Varieties of Errors of Refraction.

Myopia.

Myopia is the most interesting and important error of refraction—interesting because of the uncertainty of its genesis, and important because it so frequently ends in grave loss of sight and even blindness.

There are two types of short-sight; one we may call overgrowth myopia, the other progressive myopia. The first is a developmental anomaly, the second a disease.

Emmetropia is the result of a correct balance between the strength of the dioptric system of the eye and its distance from the retina. The young eye is hypermetropic and attains its final refraction when its growth is complete. In most cases the eye finishes with a more or less correct balance between axial length and lens strength, but there are units above and below the base line. On the one side we have cases in which the eye is short in proportion to lens power (the hypermetropes), and on the other those eyes which are too long in proportion to dioptric strength (the myopes). These myopes are not diseased, and the error, which rarely exceeds 3 dioptres, does not as a rule alter.

Progressive myopia is entirely different; here we have an eye in which the posterior segment gradually elongates. In time, if the stretching passes a definite limit, the sclera expands faster than the inner tunics of the eye, and there is developed first a myopic crescent, and eventually a posterior staphyloma. At the same time low-grade inflammatory changes take place in the choroid, and the retina begins to suffer, more especially at the macula. Haemorrhages may appear at the fovea, and large areas of the retina and choroid disappear, leaving extensive white plaques of bare sclera at the posterior pole.

These destructive changes are accompanied by serious loss of acuity. In some cases the retina refuses to stretch any further and becomes detached. I think that this tragedy is more frequent in cases which do not show the extensive destruction of the choroid that I have mentioned, but it may take place in any case of progressive myopia even when of comparatively low degree.

Causes of Myopia.

For many years there has been much discussion about the cause of myopia. A generation has passed since Cohn and his supporters coined the objectionable term "school myopia," and put forward the theory that advancing short-sight was due to the effect of close work. The upholders of this view showed that the degree and incidence of myopia increased in proportion to the age of the scholars, and that myopia was more common in those who used their eyes for near work than in others who led an open-air life. The first statement is true, and it is equally valid for the length of nose or leg in the same children. The second is but partially true. Statistics of thousands of cases of myopia are available, drawn from German, British, and other sources. They bring out the curious fact that examples of progressive myopia of the worst type with fundus degeneration are more common in agricultural than in urban districts. Moderate myopia is commonest in towns, advanced in the country. The most recent and conclusive figures were published by Ernest Thomson. He found that severe myopia was commonest in mining districts, less so in agricultural areas, and still less in towns. My own feeling is that in the Midlands myopia is commonest among miners, but I have no exact figures to go upon.

The reason is clear: in a mining village it is almost a social crime to marry out of the community. In most villages there are few surnames and the whole population is related. In towns the conditions are different. The result is that the miner is the product of close in-breeding, an agriculturist of in-breeding, the urban dweller of cross-breeding. These facts point to the real cause of myopia—heredity. Myopia is also a racial disease. It is said that it is commonest in the Roman Campagna, because for centuries this area has been the recruiting ground for the constant wars of the past; the myope was rejected for military service and lived to perpetuate his kind. Short-sight is notoriously prevalent in Germany—decimated by the thirty years' war—and among the Jews. Myopia is rare in Britain, a country that has been spared the annihilating wars of the Continent.

The objections to the theory that myopia is due to close work *per se* are to my mind conclusive. The suggestion is that during the act of accommodation and convergence the intraocular pressure rises and gradually distends the organ. It has not been proved that such a rise of tension actually takes place, and even if such were the case the conditions found in the myopic eye are not those which are present in an eye which has been subjected to real well defined high tension. In glaucoma the hypertony is associated with cupping of the optic disc, whereas in myopia the stretching is more evident further forward. It is by no means uncommon to find myopia in infants, who have not used the eyes for near work, and cases are common with high myopia in one eye alone. These facts are all against the theory that close work causes myopia. We must seek another cause, and we find it in heredity.

I have dealt with the genesis of myopia at some length because there is a danger that false theory may be followed by worse practice. There is to-day a tendency for educational authorities to deprive myopes of the benefit of a liberal education. It is suggested that a child with more than three dioptres of myopia shall not be allowed to hold a scholarship, and young children with short-sight are herded into special myope schools. Special schools are necessary for children whose sight is so bad that they cannot be educated in an ordinary establishment, but if the child has sufficient sight to benefit by the general school he should not be condemned to an inferior system unless it has been proved that work under these conditions will be detrimental to his sight. It seems to me that it is not even probable that this is the case. It is true that confinement in a badly ventilated, indifferently lighted school will affect the general body tone, and that the resistance of the sclera will be lowered with the general deterioration of tissue nourishment. This consideration has great weight in the management of cases of myopia. Such must have as much fresh air as possible with sufficient exercise and

plenty of good food. In my private practice I allow myopes to continue their education, but I forbid music and novel reading. The child must read outside school work in the vacation, and if he take up music seriously he must not think of examination training. After an illness the myope needs a long rest, for it has been noted that an increase in myopia synchronizes with debilitating disease. The myope must be examined once a year and he must wear his full correction constantly.

It was once the custom to order special reading glasses for myopia. It was supposed from anatomical considerations that the ciliary muscle was weak and accommodative power defective. In the majority of cases, and especially in the young, this is bad practice. The myope has ample accommodative power, and he becomes presbyopic at the same age and to the same degree as the emmetrope. If, however, an adult myope has never worn a correction, he has not trained his accommodation, and for a time he will find it difficult to read with a full correction. If his myopia be under three dioptres the average man will wear his glasses for far sight only.

No rules can be laid down for the correction of very high myopia, nor for the strongest lens that can be worn with comfort. I furnish my patient with the lens which gives him the maximum acuity even if he cannot wear it constantly. The rule is to give our patients the best acuity possible with due regard to comfort.

Hypermetropia.

A high degree of hypermetropia will call for a constant correction, but it is unnecessary to order spectacles for moderate long-sight which is causing no symptoms. All depends upon the individual: some must wear their glasses always, others for near work only, while a third category can read and sew comfortably without optical aid. The young eye has an immense reserve of accommodative power and can utilize it without detriment as long as the general health is good.

Astigmatism.

The greatest care is necessary to obtain an accurate measure of the angle and degree of the astigmatism of an eye. Retinoscopy will give the approximate figure within about half a dioptre, especially if a cylinder is used for the final determination, but the ultimate choice depends upon the patient himself. Some of the astigmatic clocks are useful, but I depend upon a good set of test types with standard illumination, and I make the last adjustment with the aid of Jackson's crossed cylinders. A very few patients, and those mostly with an acuity of 6/3, are able to appreciate a difference of one-eighth dioptre, and they must be refracted within this limit, for they may be uncomfortable if the cylinder be not accurate to an eighth of a dioptre.

If the examiner is not a skilled retinoscopist he will have to fall back upon the astigmometer. This is a very expensive instrument, and, as it measures the corneal curvatures only, it cannot be accurate in the presence of any lental astigmatism.

A full correction should be ordered for astigmatism except when it is extreme; in such a case it is wise to undercorrect the astigmatism at first and proceed to the full correction when the patient has become accustomed to the first glasses. In any case we warn our patients with high astigmatism that they may at first suffer from some distortion when the error is corrected. Very high cylinders can be worn with comfort. I have a patient who gets excellent acuity with a 14 dioptre cylinder and complains of no discomfort.

Presbyopia.

The correction of presbyopia is not difficult if we use common sense; we must curb our desire for scientific accuracy, for few of our patients will appreciate the work of Donders. Generally speaking it is safest to undercorrect presbyopia. After 50 it is better not to add more than 2.5 dioptres to the distance correction. Even if the smallest print cannot be read and the work has to be held at a greater distance, the under-correction allows for work at a middle distance, and is more convenient for writing. In many cases we order three pairs of glasses—one for far, the second for near, and the third for music. A low myope over 50 years of age will often be well suited with a pair of lenses one dioptre under the full correction. These will give him an acuity of about 6/12, which is ample for everyday requirements; they will afford full acuity for middle distance, and with them he can read large print.

Spectacles.

It is important that the lenses shall be correctly placed before the eyes, for all the work of a careful surgeon may be stultified by a careless and ignorant optician. For most purposes spectacles are better than pince-nez, but there are types of pince-nez which are perfectly satisfactory. The form which has a horizontal split bar and a coiled spring must be avoided, for it does not maintain a fixed distance between the optical centres and soon loses its rigidity.

Meniscus lenses and torics are best avoided for the following reasons: the optical advantages are largely theoretical, they are fragile and expensive, and they are disfiguring. No woman should wear torics. A pair of flat lenses with a delicate central mount is almost invisible, and gives a glint of light in but few positions. The toric reflects light in every position and gives the wearer a glazed appearance, hiding the eyes. Except for special occupations there is little or no advantage in Crookes's glass, which is expensive and absorbs much useful light. The combination of toric lenses and Crookes's glass is a fruitful source of financial loss to the poorer classes of society. In general the public will choose its own fitting, and we should avoid any interference with individual preference, merely indicating what we consider to be best or essential.

Changes in Refraction.

The refraction of an eye cannot be regarded as final and unchanging. During the growth of the eye, in adult life, and in old age, alterations occur—some regular and progressive, others irregular, and a few oscillatory in nature. I have not time to enter fully into this interesting aspect of the subject here, but I will briefly summarize a paper which I read to the Oxford Ophthalmological Congress in July, 1922. It is to be found in the *Transactions of the Ophthalmological Society*, vol. xlii, p. 293. I came to the conclusions that:

(1) The growing eye, examined from time to time, may show considerable alteration as regards sphere and cylinder. The astigmatism may alter both in amount and direction.

(2) In most cases equilibrium is reached when growth ceases, and the refraction is stabilized till old age, when the eye tends to alter in the direction of more hypermetropia. This change is by no means constant, in fact it is probably as often absent as present.

(3) In other adults progressive changes take place, chiefly in the amount and angle of the astigmatism, and in the main they are such that they tend to replace astigmatism with the rule by that against the rule—that is to say, that in the young a convex cylinder is more frequently vertical than horizontal, whereas in the old the reverse is found. This alteration is effected in two ways: there may be a gradual swing of the angle from the vertical towards the horizontal, or the astigmatism with the rule may diminish, disappear, and reappear against the rule. Such being the case it is advisable to examine our patients about every five years.

In addition to these alterations, which probably depend upon variation in the shape of the cornea, and perhaps upon lens changes, there are others caused by disease. Thus diabetes not infrequently gives rise to myopia which is due to an increase in the refractive power of the lens. Occasionally the reverse change may be noted. Cataract, again, may have a similar action. When a man who all his life has had good sight becomes in later years short-sighted, diabetes should be suspected.

Errors of Muscle Balance.

Heterophoria is theoretically a difficult subject, but, fortunately, for all practical purposes its detection, measurement, and correction can be carried out along simple lines.

If means are taken to abolish fusion the visual axes of the two eyes should remain approximately parallel. This state is called euphoria or orthophoria. If one axis rises or falls with reference to the other the condition is called hyperphoria or hypophoria. Diverging axes are named exophoria, and crossed axes esophoria. There is

in heterophoria a tendency for the visual axes to depart from parallelism, and the necessary co-ordination is effected by excessive use of the fusion faculty. When the muscles are fatigued this state of suppressed squint may become actual strabismus, and diplopia may be complained of.

It is obvious that heterophoria disturbs the co-ordination between accommodation and convergence, and that increased nervous energy is used up in each act of combined vision. In consequence fatigue will develop and cause asthenopia and headache. It is therefore essential that the error shall be corrected. I shall not here go into the details of the examination. We use the Maddox rod and tangent scale for testing the muscle balance at infinity, and the Maddox wing test for measuring the error at reading distance.

Hyperphoria causes most trouble, but is not common. The most frequent defect is weakness of converging power, and this causes difficulty in reading and needlework. It is corrected by adding prisms base in to the near glasses, and such an addition is greatly appreciated by those who have convergence insufficiency.

REFERENCE.

[1] *Transactions of the Ophthalmological Society of the United Kingdom*, vol. xlii, p. 127.

THE INFLUENCE OF INSULIN UPON ACIDOSIS AND LIPAEMIA IN DIABETES.

(A Preliminary Communication.)

BY

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THE effect of insulin in reducing the blood sugar of animals and of man has now been well established. Its similar action in an enhanced degree has also been found in cases of diabetes mellitus. In addition to reducing the high level of blood sugar in diabetes insulin has been shown to have the power of increasing the utilization of ingested carbohydrate. It is these facts which make the introduction of insulin of such importance in the treatment of moderately severe cases of diabetes.

In severe cases, however, other and more alarming disturbances are found. Lipaemia, increase of the ketone bodies in the blood, reduction of the bicarbonate reserve, together with hyperpnoea and mental disturbances, are all symptoms of great importance and frequently are forerunners of disastrous results. It seemed of importance, therefore, to ascertain how far insulin might remedy or prevent the occurrence of these conditions.

Methods.

The blood sugar, bicarbonate reserve of the whole blood, and the percentage of total ketone bodies in the blood were estimated, and where possible the hourly metabolism and respiratory quotient were determined. The blood sugar was estimated by the method of Folin and Wu,[1] the bicarbonate reserve was estimated by determining the carbon dioxide combining power of the blood at 40 mm. of mercury pressure of carbon dioxide, the amount found being expressed as a percentage of the normal (Haldane[2]). The ketone bodies were estimated by the method of Van Slyke and Fitz,[3] while the respiratory quotient and hourly metabolism were determined by the Douglas bag method. The lipaemia was determined comparatively by centrifuging the specimens of blood and noting roughly the degree of lipaemia of the plasma. Four stages were recognized: +++ where there was a definite layer of creamy fat above the plasma, ++ where there was marked opacity of the plasma, + where there was moderate opacity, and ± for a slight cloudiness.

The following cases are examples of those which have so far been investigated. It was considered advisable to make observations upon cases with a moderate degree of diminished bicarbonate reserve in order to have a comparison between normal people and diabetics without any such reduction, and those cases showing evidence of impending coma.

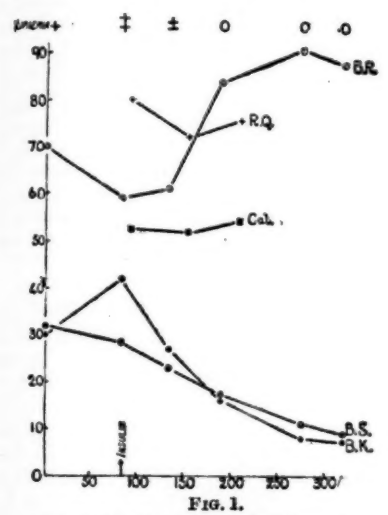

FIG. 1.

FIG. 1 (Case I).—B.R. = Bicarbonate
tory quotient. Cal. = Calories per h
sugar percentage. B.K. = Blood keto
and the blood sugar percentage hav
by means of the same scale of or
ment of observation. Patient fastin
FIG. 2: Patient fasting; weight 32 kilos.

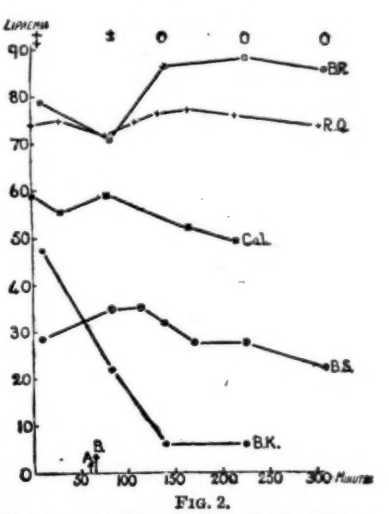

FIG. 2.

e percentage (normal 100 per cent.). R.Q. = Respira-
lculated from respiratory exchange. B.S. = Blood
es in milligrams per cent. The respiratory quotient
multiplied by one hundred in order to show them
Abscissae = time in minutes from commence-
eight 32.3 kilos. Insulin 10 units at point shown.
Insulin 4 units at A. Glucose 16 grams at B.

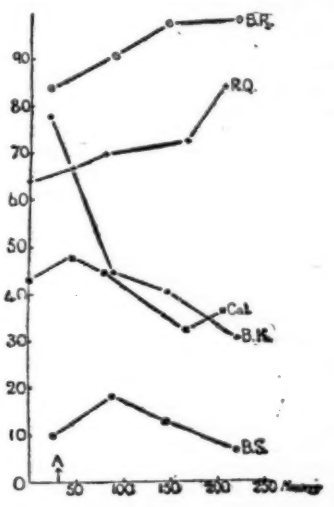

FIG. 3 (Case II).—Letters and conventional signs as in Figs. 1 and 2. Patient fasting; weight 31.1 kilos. Insulin 10 units and glucose 20 grams at A. There was no lipaemia in this observation.

CASE I.

F. H., a woman aged 24, was a case of severe diabetes that had been under observation from time to time for two years, giving a history of diabetic symptoms for three years. Her diabetic condition had progressed over numerous periods of exacerbation and remission, her carbohydrate tolerance diminishing from 67 grams a day to her present condition, in which 10 grams a day produce glycosuria. Observations were begun at 9 a.m. after sixteen hours' fasting, and were carried out under basal conditions as far as possible. The blood sugar before insulin was given was 320 mg. per cent., while the bicarbonate reserve was between 60 and 70 per cent. of normal (Fig. 1). Ten units of insulin were given and frequent examinations of the blood were made during the subsequent three hours. It will be noted that there was a steady decline of the blood sugar until it reached the level of 90 mg. per cent. Coincidently there was an increase of the bicarbonate reserve from 59 per cent. to 91 per cent., and a decrease of the ketone bodies from 42 mg. per cent. to 8 mg. per cent. During this period the hourly metabolism varied but little, although the respiratory quotient showed a considerable change. The lipaemia rapidly disappeared. At the end of the observation the urine was free from sugar and ketone bodies.

On another day the patient was the subject of a second series of observations, which were carried out under similar basal conditions (Fig. 2). It was considered of importance to determine whether the administration of glucose with insulin influenced the response in any way. Therefore half a gram of glucose for each kilogram of body weight was administered shortly after insulin. Although the blood sugar was at approximately the same level as on the previous occasion, the bicarbonate reserve was not so much decreased. However, the results were similar to those already found. As on the previous occasion, lipaemia was present at the commencement and rapidly disappeared. The respiratory quotient was more constant, and showed a definite and gradual increase and decline after the administration of insulin and glucose. The blood sugar curve increased for a time, but at the end of one hundred minutes it had returned to its fasting level, and then declined still further. The decrease in the ketone bodies was most conspicuous, being reduced from 48 mg. to 6 mg. per cent. at the end of eighty minutes. As at the end of the previous observation, the urine was free from ketone bodies.

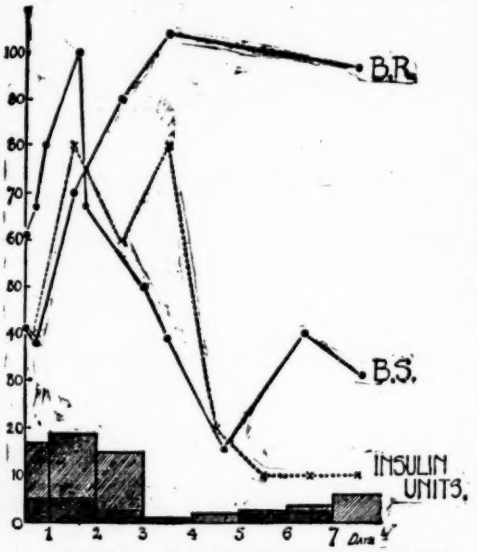

FIG. 4 (Case III).—Letters and conventional signs as in previous figures. Dotted line with crosses = insulin units per day. Total rectangles = carbohydrate ingestion grams per hour. Dark shaded rectangles = carbohydrate excretion grams per hour. Light rectangles = difference retained.

CASE II.

E. A., a woman aged 20, was admitted to the Royal Infirmary a fortnight previous to the observation suffering from thirst, polyuria, and emaciation of about nine weeks' duration. Two days after admission her blood sugar was 222 mg. per cent., and the urinary sugar 4.7 per cent. (105 grams in twenty-four hours). She showed only a moderate degree of acetonuria. Four days later she became sugar-free, but the acetonuria remained, although there were no symptoms suggestive of a severe acidosis. This observation (Fig. 3) showed results somewhat similar to those of Case I (Fig. 2).

CASE III.

J. I., a woman aged 30, was admitted to the Royal Infirmary having suffered from diabetes for eighteen months. The day after admission she developed mental symptoms, having hallucinations and delusions. A few hours later there was considerable hyperpnoea, and she became semi-conscious. The blood sugar at this time was 601 mg. per cent., and the bicarbonate reserve was only 40 per cent. of the normal. She was treated with insulin, glucose, and alkali (in the form of disodium phosphate). During the first twelve hours she received 40 units of insulin and 17 grams an hour of carbohydrate. The blood sugar steadily increased until at the end of twenty-four hours it amounted to 1,000 mg. per cent. (Fig. 4). A parallel increase of the bicarbonate reserve occurred; at the end of twenty-four hours it was 70 per cent. of normal, at the end of forty-eight hours 90 per cent., and at the end of seventy-two hours 4 per cent. above normal (104 per cent.). On the second day she received 80 units of insulin with 19 grams of carbohydrate an hour. On the third day 60 units of insulin with 15 grams of carbohydrate an hour. During this period the blood sugar fell from 1,000 mg. per cent. to 500 mg. per cent. On the fourth day she received 80 units of insulin with 1 gram of carbohydrate an hour. The blood sugar rapidly fell to 150 mg. per cent., and the urine was free from sugar. The insulin was reduced and the carbohydrate increased, with a rapid increase of the blood sugar but no appreciable diminution in the bicarbonate reserve.

Within twenty-four hours of the onset of the acute symptoms of acidosis and semi-coma the patient was quite conscious and all evidence of her acute crisis had passed away. During the succeeding days, however, her mental condition was far from normal, and she still had certain hallucinations and delusions, but these rapidly disappeared, and her condition continued along the usual course. It seems probable that this mental condition may have been due to organic changes in the central nervous system, the result of the severe disturbance of cellular metabolism.

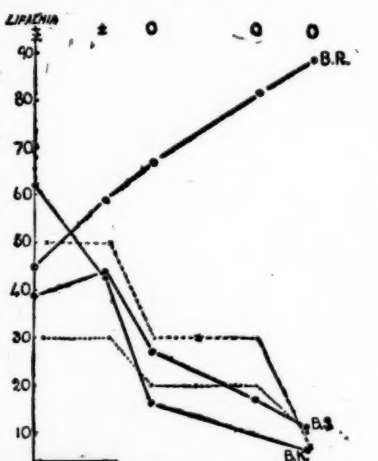

FIG. 5 (Case IV).—Letters and conventional signs as in previous figures. Dotted line with crosses = grams of carbohydrate taken. Dotted line with circles = insulin units administered. Rectangles = sugar excreted, grams per hour.

CASE IV.

Mrs. P., aged 44, had evidently been suffering from diabetes for a few months only, and was admitted to the Royal Infirmary in a state of diabetic acidosis verging upon coma. She was quite incoherent in her remarks, and did not appreciate her surroundings. There was considerable hyperpnoea with tachycardia and great prostration. The blood sugar amounted to 390 mg. per cent., the ketone bodies in the blood to 62 mg. per cent., and the bicarbonate reserve was but 45 per cent. of normal (Fig. 5). The lipaemia was considerable. In view of the results obtained in the cases already outlined it appeared to us to be very important to determine whether insulin and glucose alone, without the administration of alkali, would have the same beneficial effect as was obtained in Case III. The alkaline reserve, ketone bodies, and blood sugar were estimated every four hours, and at these periods insulin and carbohydrate were given (Fig. 5). During the first twenty-four hours in hospital 120 units of insulin and 190 grams of carbohydrate were given. At first there was a slight rise in the blood sugar from 390 mg. per cent. to 440 mg. per cent. During the succeeding twenty hours there was a steady decline, until at the end of twenty-four hours it amounted to only 110 mg. per cent. The increase in the bicarbonate reserve followed almost a straight line from 45 per cent. to 89 per cent. of normal, the decrease of the ketone bodies following almost a parallel course. The lipaemia had disappeared at the end of ten hours. The improvement noticed in the patient's condition during the first sixteen hours was most spectacular, and at the end of twenty-four hours she appeared practically normal. In spite of the large quantity of carbohydrate taken, the glycosuria during the first seven hours amounted to but 5 grams an hour, for the next twelve hours it averaged three-quarters of a gram an hour, and during the last five hours there was but a trace, the urine at the end of twenty-four hours being sugar-free.

In view of the results obtained in these cases it seems to be indicated that insulin and carbohydrates, when given together in sufficient amounts to patients with diabetic acidosis verging upon coma, have a most beneficial and indeed spectacular effect.* The rapid disappearance of the lipaemia and ketone bodies of the blood, and the return to normal of the bicarbonate reserve, clearly indicate the means whereby this improvement is brought about. In Case iii the great increase in the blood sugar did not appear to have any deleterious effect—in fact we have reason to suppose that an adequate supply of carbohydrate is most important in the treatment of such cases, and that in view of the known deficiency of glycogenic function this supply must mainly be available in the form of sugar in the blood and tissues. If it be true that the acidosis in diabetes is the result of the imperfect oxidation of fat through the inability of the cells to use carbohydrate, such results as we have obtained are quite to be expected.

It is noteworthy that the reduction of the blood sugar was not always accompanied by such an increase of the respiratory quotient as might be expected if the sugar had been burnt. Determination of respiratory metabolism in emotional subjects may not give a proper indication of the

*We wish especially to emphasize the importance of combining carbohydrate administration with the use of insulin in cases such as the above. We have evidence that the administration of insulin alone may increase the amount of acidosis present. This question is at present under investigation.

true respiratory quotient owing to irregularities of the breathing. Yet in such cases as the above there is another factor to be considered. The liberation of alkali in the blood consequent upon the removal of the ketone bodies would result in a compensatory retention of carbon dioxide. This might easily be sufficient in amount not only to mask any rise but even to produce a fall in the respiratory quotient. It will be noted in Fig. 1 that there is a conspicuous fall in the respiratory quotient at the time the increase of bicarbonate reserve is most rapid.

The above results form part of a larger scheme of research undertaken on behalf of the Medical Research Council.

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TRAUMATIC PARAPLEGIA:

OBSERVATIONS ON CASES WITH REFERENCE TO TREATMENT AND PROGNOSIS.

BY

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THE object of this paper is to give an account of cases of paraplegia of traumatic origin with a view to establishing a rational treatment and prognosis. All the cases are collected together at the Queen Alexandra Hospital Home at Roehampton, and afford a unique opportunity for study.

It was rare before the war to meet a group of cases of uncomplicated traumatic paraplegia. The cases discussed in this report are all traumatic; all were young men when wounded, and their general health and strength at the time of the injury were apparently good. The belief is therefore warranted that most of the symptoms are purely the result of the spinal injury. It is possible, therefore, to draw conclusions as to treatment with reference to prognosis. In paraplegia following some particular disease this is not possible, since the pure picture of paraplegia is blurred in with the general symptomatology of the particular disease causing the paraplegia.

Types of Cases.

The number of cases studied was 56, and the average age at the date of injury 21. All the cases when first seen had been wounded for three years, and some for five or six years. Of the 56 cases 39 were of the complete lesion type at the level of the fourth to tenth segments; 17 of the incomplete lesion type, ranging from the eighth to the lower lumbar segments.

In the cases with a complete lesion two well marked types can be distinguished—those with flaccid paralysis (paraplegia in extension) and those with spastic paralysis (paraplegia in flexion). Both types have an equal degree of motor and sensory paralysis extending as high as the original level of the lesion, but in the flaccid type there is a complete absence of all tendon and skin reflexes (with the exception of the anal skin reflex, which in a few cases is present). The lower limbs lie quite motionless, wasted, and shiny. The spastic cases, on the other hand, show an exaggeration of the knee-jerks (the ankle-jerks vary, and are occasionally absent), an extreme degree of ankle and patellar clonus, and a double Babinski response. The limbs appear very irritable to small stimuli; stroking or blowing on the skin surface will generally lead to involuntary contraction, the thigh becoming flexed on to the abdomen. A slight degree of irregular wasting of one or both limbs is to be observed, and the motor and sensory loss is as complete as in the flaccid cases. In both types there is complete loss of voluntary control over micturition and defaecation.

The cases exhibiting an incomplete cord lesion also fall into two types—the spastic and flaccid. The spastic cases have brisk tendon reflexes with pronounced double Babinski toe reflexes and ankle clonus, and the abdominal reflexes are absent. In one case, however, both upper and lower abdominal reflexes are briskly present, the Babinski reflex also being very pronounced. A certain amount of irregular wasting of the calf and thigh muscles may be present. The power of voluntary movement of the lower limbs is considerable, especially after adequate massage, but walking is generally difficult, since so much energy is expended in overcoming the spasticity.

In the flaccid cases either all reflexes in the lower limbs are absent, or the knee-jerk is just elicitable in one or both limbs. The knee-jerk, if present, is not altered by reinforcement; one smart tap will elicit it, and a series of taps with the patient's hands clenched, etc., do not alter its character. The wasting may be very considerable, especially in the calf muscles, but the thigh muscles may be only moderately wasted. Systematic massage can improve this wasting very noticeably, but the neurological signs (that is, tendon reflexes) do not alter.

Voluntary movement varies. Most patients can stand and walk with aid, the motive power appearing to come from the muscles of the pelvic girdle. The loss of superficial sensation in the lower limbs is of a very patchy and variable nature, the majority showing an irregular riding-breeches anaesthesia with some patchy analgesia over the feet. The loss of muscle and joint sensibility is generally great, and nearly all the patients who can walk can only do so by looking at their feet; they cannot walk in the dark.

The bladder and rectal functions show a varying degree of departure from the normal. The majority of patients are aware of the desire to pass water and can control the passing of it—provided the bladder is not too full or the weather not too cold. Occasionally retention occurs, and a catheter has to be passed or retained for a few days. Five cases have almost normal bladder control but complete faecal incontinence, whilst three have no bladder control but normal rectal control. Sexual impotence is invariable. Priapism is common, and often a most distressing and, if there be obstruction to the circulation by a tightly fitting rubber urinal, a highly dangerous complication.

The blood pressure is within normal limits in all, and there is no difference between the arm and the leg readings.

Special Symptoms in the Complete Type.

The symptoms now to be described are not as a rule found in the incomplete type of paraplegia.

Pain in the lower extremities is described as sharp, gnawing, griping, burning, cutting, and is felt all down both legs; when very severe its onset is acute and there is a rise of temperature, though never above 101° in uncomplicated cases. There is no visible change of any kind in the physical signs. The patient is obviously in very acute pain, and is only relieved by hypodermic injections of morphine. A moderately severe attack is sometimes checked by aspirin, or better with salipyrin (gr. xx). The duration of these attacks is usually about twenty-four to forty-eight hours or less; if longer, some other factor is responsible, such as an old bedsore which has become septic, or renal colic. The patients themselves ascribe these attacks to a change in the weather. I confess myself sceptical on this point, but cannot offer any adequate explanation as to the mode of origin of these pains. The symptoms suggest some irritation of the sympathetic nervous system, especially the pains described as gnawing and griping, and may have an origin in the sympathetic ganglia outside the cord. Whatever the cause, there is no doubt that these limb pains form a very definite part of the syndrome of the complete type of paraplegia. Nearly all the patients complain of a continual sensation of tingling in the lower extremities, but this is not described as painful.

Flatulence is a very common and occasionally an acutely painful complaint. Well marked generalized abdominal distension with ladder-like peristalsis is to be observed, sometimes so great as to suggest definite obstruction. As a rule there is no vomiting, but constant eructations of gas and the passage of flatus per anum. The very severe cases look ill, and present a toxic appearance suggesting uraemia. These cases are relieved by a single injection of pituitary extract (posterior lobe, 1/2 to 1 c.cm.). The slighter cases, with moderate abdominal distension and pain, are often strikingly relieved by injections of mx of 1 in 1,000 liquor adrenalin. hydrochlor., or by double doses by the mouth in ice-cold water. An enema, either simple or mixed with asafoetida, does not appear to relieve

this condition, though, if given soon after the distension has disappeared, it will probably prevent a recurrence.

Renal Colic.—Typical attacks of renal colic are quite common, and occasionally the symptoms are bilateral. There is a decided tenderness in both loins, and usually in those cases of paraplegia that suffer frequently from such attacks a well defined mass in the position of the kidney is palpable. Several cases have shown very large irregular masses in both loins, which have been proved to be enormously dilated pelves filled with pus and calculi, and surrounded by a grossly fibrotic kidney substance. The passage of blood-stained purulent urine usually follows after the attack has subsided, and may continue for several days.

Chronic Urino-genitary Sepsis. — Under this rather cumbersome title I place all the complete paraplegics—that is, those patients with complete paralysis of micturition. Although the urine may appear clear and free from pus by gross tests, there is always present a cloud of albumin on boiling after adding acetic acid, and microscopically there is always evidence of a continually progressive breaking down process in the uro-genital tract in the shape of pus cells, bladder and renal epithelium, etc. At any time this process may become suddenly acute, resulting in a rapidly developing pyonephrosis, with an increasing mass in either loin, and high fever or cystitis, prostatitis, orchitis, or epididymitis. It is common to find a patient with no gross external evidence of an acute infective process, but with an irregular fever of months' duration, before the temperature finally returns to a normal level. I have regarded such cases as due to chronic sepsis in some portion of the uro-genital tract. I have often overlooked the prostate as the seat of infection in such cases, and in one case cautious prostatic massage led to the expulsion of a quantity of extremely offensive blood-stained pus, and the fever subsided. In massaging the prostate in these cases extreme care must be exercised, since if the massage be too vigorous a most alarmingly profuse haematuria will occur and take several days to subside.

Uraemic Manifestations.—Uraemia is the last stage in these cases. In a few instances it supervenes quite gradually without any very prominent symptoms. In one patient, who had been up and about for months, and seemed in good health and spirits, I noticed one morning that the respiration was peculiar, suggesting asthma. He said he felt very sleepy, but complained of no discomfort. The same evening twitching was observed, and coma rapidly supervened. No urine had been passed for twenty hours. Pilocarpine injections and hot packs were ineffectual. In other cases, however, the uraemic symptoms are most distressing, and continue for days; intractable vomiting and headache are prominent symptoms. The urine may show a practically normal measure or be entirely suppressed. I have never observed renal oedema of the eyelids, face, or back in any of these cases, and the eye-grounds have also been entirely normal, even in those patients who have shown symptoms of repeated slight uraemic attacks. The *post-mortem* findings are what one would expect. There is no naked-eye appearance of any true kidney substance. The kidneys are replaced by what looks like an irregular abscess cavity with fibrous walls, its interior filled with calculi and pus; the ureters are very much thickened, and occasionally filled with calculi. Slight cases of uraemia may recover under vigorous treatment (prompt injections of pilocarpine and hot packs, with abundant fluid by mouth), but I have not seen recovery in cases showing twitching even where the other symptoms are quite mild.

Bedsores.—These as seen in the cases under discussion are, for the purposes of treatment, conveniently divided into wet and dry. An old dry bedsore may remain stationary for years, and, unless very roughly handled, will not cause any trouble. A discharging bedsore, on the other hand, may defy the most energetic treatment in the shape of ointments, rest, and a variety of dressings and lotions, and get deeper and wider. I have no faith in any one particular line of treatment. I remember one patient who had had the most scrupulous aseptic treatment directed to a large extending bedsore with no avail; finally it was decided to abandon the dressings and allow the bedsore to take its chance in a dressing largely composed of faeces; the result was complete healing within a few weeks. I can only attribute the healing of a bedsore to some personal factor in the patient, and assume that the reaction towards healing depends more on the general than on the local condition. As a rule dry dressings for dry bedsores and wet (preferably hot) dressings for wet sores give the best results. An extremely useful ointment for a clean but extensive bedsore which shows little sign of healing is that supplied by Messrs. Christy and Son under the trade name of "Sobrefacien."

General Treatment.

The incomplete cases with recovered bladder function show a gradual tendency to improve. Daily massage, systematic walking exercises, encouragement in self-confidence, all help this improvement. Such patients may with confidence be told that they will lead useful if restricted lives, and that no relapse need be feared. The completely paralysed patient, however, is in a different class. His progress cannot be other than gradually downward. Treatment, therefore, should be directed towards the retardation of that process as much as possible. Expert nursing, massage, and suprapubic drainage of the bladder are the essentials of treatment. I am convinced that the complete cases who have retained their suprapubic drainage apparatus have in all instances lived longer and have been very much freer from intercurrent symptoms than those without. Some of these cases with suprapubic drainage were wounded six or seven years ago and have hardly experienced the slightest discomfort. In patients with suprapubic drainage I have never observed any of the symptoms referred to above, such as acute pains in the lower limbs, abdominal distension, or intermittent fever of a severe and protracted nature. All the cases exhibiting such symptoms have either never had suprapubic cystotomy or the original suprapubic opening had been closed at some later date in their paraplegic history. Out of eight deaths two were in suprapubic cases, one of whom died of septic arthritis accidentally caused through injury; the other case died of uraemia.

There appears to be no doubt that as far as the patients' general condition is concerned suprapubic drainage has a great advantage over a closed automatically acting bladder. The bladder is washed out twice daily and the tubing changed. A solution of 1 in 8,000 to 1 in 10,000 potassium permanganate is the most effectual irrigating lotion. The best type of rubber drainage tube is an oesophageal tube. It is soft and does not cause trouble round the opening. For the complete cases I usually prescribe a routine mixture, to be taken thrice daily, of—

℞ Urotropine	... ...	gr. x
Ammon. benzoat.	... ...	gr. xv
Tinct. hyoscyami	... ...	m xxx
Syrup. aurantii	... ...	ʒj
Aq.	... ...	ad ʒj

Ammonium benzoate, when taken over long periods, does not cause digestive upsets like the acid sodium phosphate. The urine can generally be kept at a constant level of acidity by this therapy. I have found that tincture of hyoscyamus very appreciably diminishes the tendency to acute retention in cases without suprapubic drainage.

In cases without suprapubic drainage a retained catheter is used if there is a tendency to spasmodic retention. I have not found any harm result from employing a retained catheter for an indefinite period. The urethritis which may result can be quite easily controlled by sufficient lubrication of the catheter and irrigation of the urethra with 1 in 8,000 potassium permanganate solution.

Massage of the lower extremities, back musculature, and abdomen is absolutely essential in all cases of paraplegia, whether complete or incomplete. Without it the patient very quickly develops contractures, and bedsores on the feet appear; his general condition deteriorates, and he becomes very much weaker, so that he will be unable to sit up if he is a completely paralysed patient of a high level type. Massage should be given daily.

It does not appear to influence the acute pains in the lower limbs.

The importance of nursing in these cases cannot be overestimated. In fact, without the special care that the patients receive from the nursing staff at Gifford House I doubt whether any of the complete cases would be alive to-day.

Prognosis and General Summary.

In the complete cases the prognosis cannot be other than ultimately fatal, but in the absence of definite uraemic symptoms it is almost impossible to predict an immediately fatal issue. Even where a patient may seem semi-moribund, with foul discharging bedsores, intermittent fever, and rapid general wasting, there is quite a chance that he will make a good recovery and be up in his chair again. A patient with extensive osteomyelitis of the spinal vertebrae following a bedsore gradually pulled round and the condition entirely healed. On the other hand, I have not seen recovery following any uraemic nervous symptoms, even when the patient's general condition appeared quite good. It is always safe to predict rapidly developing coma and death when such symptoms exist. Acute haemorrhagic cystitis is always rapidly fatal; it may come on without any warning at any time during the patient's paraplegic life. I have seen two deaths from this condition, both in patients without suprapubic drainage. The mental factor undoubtedly plays a very large part in the grip that the patient has on life. A greatly depressing shock of some kind, the death of a friend, or serious trouble of any sort, will be sufficient to depress the patient's vital powers. He will become silent, depressed, refuse food, look increasingly ill, begin to develop bedsores, and may die if his confidence is not restored.

The main factors influencing prognosis appear to be:

1. Continued and skilled nursing.
2. Daily massage.
3. Establishment of adequate bladder drainage, preferably by the suprapubic method. Closure of a suprapubic cystotomy opening which the patient has had for some years and which is giving no local trouble is entirely contraindicated. This statement has been put to the test in five of the complete cases, and in all five symptoms have developed, such as bedsores, limb pains, fever, and malaise, which were not manifest previous to the closure.
4. Encouragement of mental confidence and mental occupation. In this respect an auto-wheel chair of special pattern has been found invaluable. It saves the patient any unnecessary friction, and enables him to get about and enjoy life, and generally assists him in forgetting the tragic aspects of his disability.

A NOTE ON THE VALUE OF SYMPTOMS IN THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS.

BY

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THESE remarks are addressed primarily to the general practitioner, upon whose failure to diagnose pulmonary tuberculosis in its early stage some quite unjustifiable aspersions have been made from time to time. It is, indeed, encouraging to note how keenly the general practitioner has recently taken up this question and with what comparative success, especially on the lines of more recent views on physical diagnosis. It is not my intention to discuss this question from any original or novel standpoint, but I am inclined to think that we should seriously consider whether in this connexion the pendulum has not swung rather too far in the direction of diagnosis from purely physical signs.

The time is, I think, ripe to seek an adjustment of values between the two chief factors in the early diagnosis of pulmonary tuberculosis—namely, its symptomatology and physical signs. In a disease in which so many clinical and anatomical phenomena have to be correlated, and in which the same individual may present a new symptom complex every few weeks, the position of the diagnostician is not always a happy one. It is only by painstaking adjustment of all the contributory elements in such cases and in the use of skilled judgement in interpreting the clinical picture thus presented that success will attend efforts to make a diagnosis in these difficult cases.

I am not aware whether it is still the rule, but until very recently I understand the diagnosis of pulmonary tuberculosis in the army was not regarded as established unless the tubercle bacillus had been found in the sputum; and it is not so many years ago that in civil practice the earliest recognition of the disease was based upon data which at the present time are considered to be the sign of a comparatively advanced stage. In auscultation, for example, it may not yet be generally appreciated that what is to be looked for is a change in the breath sounds of the *inspiratory* phase, which may be noted at a much earlier stage of the disease than alteration in the *expiratory* phase which may be present in many quite healthy chests.

The change of method in the elucidation of physical signs during the past few years has been, indeed, quite revolutionary, and thanks to Riviere and others, certain refinements in physical examination have materially assisted in the earlier recognition of the disease. The utility of inspection and palpation has been especially developed by the American school, and the value of these methods of physical diagnosis greatly enhanced. Hitherto inspection of the chest has been, from the point of view of the general practitioner, rather a perfunctory affair, and the virtues of palpation limited to vocal fremitus—now regarded as of doubtful value as a diagnostic sign in such cases. Now that special attention is being paid to the muscle reflex which results in what is known as "lagging" (the presence of which, especially at an apex, strongly suggests active mischief, although percussion and auscultation may give no indication of this) inspection and palpation assume a more important place. The proper appreciation of this sign requires practice, but this is soon acquired.

The information conveyed by inspection in these cases may be greatly reinforced by light finger-tip palpation, by means of which evidence of localized reflex muscle spasm—especially as affecting the sterno-mastoid, the scaleni, and the upper pectorals—may be detected. The trained finger appreciates in such cases a sense of muscle resistance in contradistinction to the smooth and more elastic sensation of normal muscle tension. Then, too, trophic changes in the muscles of the shoulder girdle and the state of the subcutaneous tissues may be similarly recognized. In the opinion of some experts, indeed, light touch palpation has very largely replaced percussion as an aid to diagnosis.

The technique of percussion, too, has been much improved, and it is now generally recognized that to be of any real value, apart from other points of detail, percussion must be light. But this method of physical diagnosis still presents many pitfalls, and, apart altogether from the question of accuracy, it must be strongly affirmed that local changes in the percussion note, especially at the apex of a lung—even if the existence of such cannot be doubted—convey nothing as to the presence of an active tuberculous lesion, or, indeed, that the lesion, if such exists, is tuberculous at all.

In my opinion, too much attention in the matter of percussion has been focused upon the definition of certain areas of the chest wall called after some eminent authorities. It is questionable, for example, whether in the early cases of pulmonary tuberculosis now under discussion any appreciable change can be found to have occurred in Krönig's area of so-called apical resonance. In rather a different category are the "bands of impairment" in the percussion note first noted by Abrams. These bands are said to be purely reflex in origin and to be one of the earliest indications of active pulmonary tuberculosis. My own experience of this diagnostic sign is not extensive, but I confess that in a number of cases in which I have utilized this method of physical diagnosis I have never been able to satisfy myself as to the reliability of the results.

But if we may gratefully acknowledge that a great deal of useful work has been done by what I may perhaps refer to without offence as the "physical force" school, we must admit, I think, that on the question of the early diagnosis

of pulmonary tuberculosis they have of late held the field too exclusively.

Turning, then, to the symptomatology of the disease, we find that a toxaemic state, revealed in one form or another and in greatly varying degree, is to be regarded as a manifestation of active tuberculosis. Pulmonary tuberculosis, however, cannot be held responsible for every unexplained toxaemia, as the symptom complex of this condition is much the same whatever the source of infection, and the existence of localized infection such as sinusitis, tonsillar infections, oral sepsis, and bronchiectasis must be excluded.

The group of symptoms comprise malaise, lassitude, nervous instability, digestive disturbances, tachycardia, fever, and night-sweats. I propose to deal in some detail only with two of the more prominent of the symptoms of the toxaemic syndrome, both of which on accurate observation will be found to present certain features characteristic of tuberculosis. These are (*a*) fever, (*b*) tachycardia.

Fever.

The presence of fever as an indication of tuberculous toxaemia is in this connexion of the greatest value, but certain qualifications are necessary if we are to arrive at trustworthy conclusions. It is unfortunate that temperature records are often taken in so casual a manner as to be practically valueless. It is not necessary, I think, to assume that a rectal temperature record is the only reliable method, more especially in private practice. If certain simple precautions are taken oral temperature records are quite trustworthy, except in the case of mouth-breathers. The thermometer should be retained in the mouth at least seven minutes; the temperature should not be taken immediately after the patient returns indoors after exposure to cold wind nor after partaking of a hot meal. It is not sufficiently recognized that the maximum temperature period varies greatly in different persons; to ascertain this period in a given case it is necessary to take the temperature every two hours. The first recorded temperature for the day ought not to be taken, as is often the case, after the patient has got up and dressed, but as early as possible in the morning before rising. The normal diurnal variation in temperature is about 1.5° F. In a majority of healthy persons the average early morning temperature is approximately 97.2° to 97.4° F., rising to a maximum of 98.6° F. in the early afternoon. This normal average is maintained by an equilibrium between the forces governing heat production and heat dissipation, and the entry of toxins into the blood stream, from whatever source, disturbs this balance. While it is not usual to find much temperature elevation in early pulmonary tuberculosis, it may be found that the early morning temperature is 98° F. and the maximum record for the day 99.2° or 99.4° F. The necessity for a continuous temperature record extending over three or four weeks in any case of suspected early tuberculosis will become apparent when it is pointed out that the toxaemic state is by no means constant; it ebbs and flows. The continuous temperature record therefore gives a fair representation of the degree of toxaemia present.

In chlorosis there is sometimes a slight average increase of temperature, while the premenstrual rise must not be overlooked. In persons of highly strung nervous temperament there are sometimes quite noticeable variations in the temperature curve. It will thus be seen that the process of elimination may have to be thoroughly invoked to clear the ground. Are there, then, any very clear indications, when all this has been done, which may point the way to a tuberculous toxaemia as the responsible source of the fever? I think there are. My own experience has led me to attach much importance to an early morning temperature—taken before rising—which is consistently a little above the average mean. The effect of a definite amount of exercise may be noted; while in a healthy person there is always a temporary rise—sometimes considerable—after exercise, this is usually quite evanescent, and within half an hour or so the temperature returns to normal. This is not so in the case of a tuberculous person. The decline of the temperature to normal limits is delayed and it may remain elevated for two or three hours. Hence the value of post-exercise temperature records in suspicious cases. Then, too, extraneous conditions resulting in emotional disturbance, worry, and anxiety, which in a healthy person have no appreciable effect on temperature, may cause considerable disturbance in a tuberculous person. These features may be said to be characteristic of the tuberculous process. It will be seen, therefore, that fever, though still to be regarded as one of the cardinal points of the toxaemia of tuberculosis, cannot be accepted without due consideration of the qualifications outlined above, especially if there is no supporting evidence in other directions. It must be noted, however, that the absence of fever does not necessarily rule out the possibility of the existence of pulmonary tuberculosis.

Tachycardia.

From time to time I have seen patients found to be suffering from early pulmonary tuberculosis who have referred to an irregular and rapid action of the heart coming on without any apparent reason, but on the whole it has not been my experience that the cardiac disturbances caused by tuberculous toxaemia are noticed subjectively by the patient.

Tachycardia is of frequent occurrence in early tuberculosis—Fishberg puts it at 80 per cent. of incipient cases; it is hardly ever a subjective symptom. Like fever it is of toxic origin and appears to be the result of excessive stimulation of the sympathetic nervous system. The instability of the pulse in pulmonary tuberculosis would appear to result from a combination of vagus and sympathetic stimulation. Pottenger, who supports this view, considers that tachycardia as such is not a particular characteristic of active tuberculosis. In his opinion it is not regularly present unless the patient is in a depressed state, or has been overexerting himself. This, I am inclined to think, does not fully represent the case. It is now, I believe, generally accepted that a pulse rate out of all proportion to any febrile condition present is a very common and reliable symptom of early tuberculosis in an active state, and further that the pulse rate may be notably increased on the slightest excitement or even after a fit of coughing. Another well marked characteristic is that, just as in the case of fever due to tuberculous toxaemia the fall of temperature is considerably delayed after exercise, so it is found that the increased pulse rate after exercise falls much more slowly than in health. I have repeatedly seen cases in which there has been persistent tachycardia, not referable to any cardiac abnormality or hyperthyroidism—a condition which is always to be borne in mind in the differential diagnosis—and in which the true diagnosis was only revealed by a sharp haemoptysis. The physical signs in the chest in such cases may for a long time show no evidence of anything abnormal.

It has to be recognized, however, that pulmonary tuberculosis may masquerade as an affection of any of the great systems of the body with no signs or symptoms in any way directly referable to the lungs.

In none of the types of cases under discussion is it assumed that assistance can be sought by the presence of cough, sputum, haemoptysis, pleurisy, or indeed any direct overt symptom. In such early cases radiography is of doubtful value and the complement fixation test is at times rather a blind guide. The key to the diagnosis is to be found more commonly in the history of the present illness, and inquiry cannot be too minute or painstaking.

OBSERVATIONS ON A CASE OF MYASTHENIA GRAVIS.

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THE following case, of a man in whom symptoms of this rare condition developed while he was serving in the army in the late war, and some six years before he attended this hospital as an out-patient, seems of sufficient interest to warrant publication.

The patient, a man 43 years of age, a painter by trade, first came under observation as an out-patient on December 13th, 1922, when he was complaining of muscular weakness and exhaustion and inability to swallow properly.

Clinical History.

The patient joined the army as an A1 man in 1914. In 1916 he began to develop pain and weakness in the left shoulder and arm so that he was unable to lift things. His head began to feel heavy, and the muscles of the neck became so weak that he had difficulty in holding it up straight and it drooped downwards on to the thorax. He could not brace back his shoulders, which became rounded. His legs began to feel weak and heavy, and he was tired after a short walk. Shortly after this he had difficulty in articulation and he began to stammer. The upper eyelids began to droop and he developed a squint in the right eye which caused double vision. The lower jaw became weak, he had difficulty in chewing hard foods, and at the end of the day he was unable to close his mouth and the jaw drooped down, saliva dribbling from the mouth. Sometimes he had to hold his lower jaw up with his hand to enable him to masticate properly. In addition he complained of general weakness and unusual fatigue. He noticed that the quieter he was and the less he exerted himself the better and stronger he felt; thus at the beginning of the day the above symptoms were slight, but as the day wore on, especially if he had been exerting himself, they began to appear and reached their maximum intensity in the evening.

The symptoms used to disappear almost completely for intervals of a few weeks, during which he appeared to be quite normal, and then returned again, and a diagnosis of neurasthenia was made by the army doctors. Since that time the symptoms have become more marked, and in addition the patient developed difficulty in swallowing, the food regurgitated through his nose, and his voice became nasal. He had attacks of dyspnoea, especially during a fit of coughing. His legs became weak and he tended to fall.

Clinical Examination.

The striking thing is the facies, which is one of great fatigue or exhaustion, superimposed on a somnolent mask-like expression. The photograph shows the bilateral ptosis, the right external strabismus, the drooping of the jaw, and the general expression of exhaustion. The speech is normal in the early part of the day, but after much talking it becomes stammering and nasal in quality, those syllables which require complete closure of the nasopharynx by the elevation of the soft palate being pronounced with the greatest difficulty. The intellect and memory are normal and there are no emotional changes.

Attitude.—The body is bent somewhat forward, the head bowed down, the jaw droops, the lower lip sags down, and saliva dribbles from the angles of the mouth; the shoulders are rounded owing to weakness of the muscles which brace back the shoulders.

Muscular System.—No atrophy. The muscles are hypertonic and in a state of irritability. The patient states that he has experienced "twitchings" in certain muscles, especially after fatigue, particularly in the left masseter, lower eyelids, muscles of nape of neck, and in the thigh muscles. All the muscles show the myasthenic phenomenon—that is, at first the movement is performed perfectly, but after being repeated it rapidly becomes slower and slower, and the extent of movement becomes diminished and is accompanied by severe pain; finally the muscle fails completely and after resting for a variable period recovery takes place; movement can then be resumed and the same cycle is gone through again. A curious phenomenon is seen towards the end of the voluntary contractions and is best observed in the masseter in the movements of opening and closing the mouth—namely, at the end of the last contraction the muscle passes momentarily into a state of painful spasm in which it cannot be voluntarily relaxed, and then it suddenly relaxes finally and completely, and passes into a state of paralysis. Thus the patient complains that, after chewing anything hard, his jaw soon becomes tightly clinched for an instant during which he cannot open it, and then it falls down "like a dead weight."

Electrical Reactions.—The reaction described by Jolly was obtained—that is, the muscles responded readily to the first few stimuli with the faradic current, then the contractions rapidly diminished in extent and ceased after a few minutes in spite of the continuance of the stimulus. After a period of rest, this myasthenic reaction was obtainable again; but this exhaustion of the muscles was not brought about by galvanism.

The superficial and deep reflexes are all exaggerated. The knee-jerk shows an alteration in type, the contraction appeared to be a summation of a series of superimposed small contractions. It was not possible to tire out the knee-jerks by repeated tapping of the patellar tendon for five minutes, though after the attempt the patient made the remark that he "felt as though he had just done a ten-mile walk." After this test the quadriceps muscle was observed to be in a state of coarse fibrillary tremor which the patient states is identical with that previously experienced in other muscles. Knee clonus is present. The pupils are equal and react to light and accommodation, and the fundi are normal. The right eye shows a permanent external strabismus, more marked in the evening, due to paresis of the internal rectus. Coarse lateral nystagmoid movements are present in both eyes. Deglutition, especially of solids, is difficult when the patient is fatigued, and regurgitation through the nose then occurs. The palatal reflex is sluggish. There is no change in the organic reflexes. No sensory alterations in the nervous system are found. The blood Wassermann reaction is negative. Clinical and radiological examination of the thorax reveals no enlargement of the thymus gland, which is said to occur sometimes in this disease.

Treatment.

A prolonged course of treatment with strychnine alternating with pituitrin (hypodermically), thymic and thyroid extracts orally, was given, as recommended by those who suggest that myasthenia gravis may possibly be associated with disturbances in the endocrine system, but little improvement was noted. Most benefit appeared to result from absolute rest and the avoidance of all fatigue.

HAEMORRHAGE FROM THE LARGE BOWEL CAUSED BY AN ADHERENT APPENDIX EPIPLOICA.

BY

R. ECCLES SMITH, O.B.E., F.R.C.S.EDIN.,

BARRY, GLAMORGAN.

IN the *British Journal of Surgery* (July, 1922) Mr. Duncan C. L. Fitzwilliams recorded a case of a hernia involving an appendix epiploica, which became strangulated in a hernial sac, giving rise to urgent symptoms, but without the classical features of a strangulated hernia. Within the last year two somewhat similar cases were referred to me; the symptoms resembled subacute strangulation of a hernia, recurring at intervals, followed by the passage, after each attack, of a quantity of bright blood by the rectum.

The first patient was 54 years of age, and the possibility of a growth of the lower bowel was entertained by his medical attendant. The second patient was about 30 years of age, and the diagnosis was obscure, the presence of a polypus or adenoma of the lower bowel being suggested. In neither case were haemorrhoids present, nor did examination reveal any growth of the lower bowel, so far as could be ascertained by the finger or the sigmoidoscope.

In the first patient there was a hernia on the left side, which troubled him by coming down only occasionally, so that he did not wear a truss. In the second case the hernia was on the right side, and again was apparently of such a nature that he did not trouble to wear a truss. The symptoms in each case were very similar. The onset was with a fairly severe pain in the lower part of the abdomen, followed by vomiting and by colicky pains for a short time. Within sixteen to twenty-four hours bright blood was passed per rectum, beginning with anything up to two ounces; it ceased in the next thirty-six hours. In each case the attacks came on while the patient was engaged in somewhat laborious work.

The diagnosis of a partial strangulation of the large bowel, of the Richter type, was given without much difficulty in the first case, where the hernia was on the left side, the bleeding following on the congestion of that part of the pelvic colon which had been partly strangulated and had escaped back into the abdomen. The second case was a little more obscure until a bismuth enema had been given. This showed plainly that the pelvic colon was lying right across the abdomen and appeared to be fixed near the region of the internal ring on the right side. A similar diagnosis was therefore made.

At operation in each case it was noted that an appendix epiploica of the pelvic colon was fastened to the fundus of the hernial sac; the neck of the sac was not unduly wide. There can be no doubt that the fixation of the appendix epiploica from time to time dragged a part of the pelvic colon into the sac, causing a partial strangulation of this viscus after the manner of Richter's hernia, giving rise to haemorrhage from that part of the bowel, after its escape, by rupture of some of the congested vessels consequent upon the reaction of the bowel. Radical cure of the hernia with removal of the offending appendices epiploicae entirely removed the repeated attacks of partial strangulation and the loss of blood from the lower bowel.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

MEAT POISONING IN JERUSALEM.

DURING the period January 5th to 11th, 1923, five families, comprising in all fourteen persons, were attacked with what appeared to be symptoms of food poisoning. The symptoms in each case were practically identical—initial chill, fever, gastro-intestinal disturbance, vomiting, colic, and diarrhoea, while in one or two of those affected nervous symptoms and collapse occurred.

The investigations made by Dr. MacQueen, A.P.M.O. Jerusalem, finally revealed the origin. He prepared a list of those suffering, and a list of the articles of food eaten by them during the three days prior to the onset of symptoms. It was found that each one of the patients had partaken of one thing in common—pork sausage—and, further, that each of the families had purchased portions of the same sausage at the same shop, but on different dates.

The ages of those affected ranged from 5 to 53. The time elapsing between the eating of the sausage and the appearance of the symptoms varied from four to seventeen hours; the average interval was seven hours.

In the case of a woman, aged 55, death supervened; she partook of the sausage on January 11th at 12 midday, showed first symptoms at 2 a.m. the next day, fourteen hours later, and died at 8 p.m. on that day, eighteen hours after the onset of symptoms. *Post-mortem* examination was not allowed.

On January 12th two samples of pork sausage were submitted to me from the District Health Office. One sample was taken from the portion left over from the sausage partaken of by a family then suffering, the other from the portion of sausage still remaining unsold in the shop where all the affected families had made their purchase.

Portions of the suspected sausages were removed, and after suitable treatment and preliminary enrichment in dulcite peptone water, the growth resulting was transferred to plates of MacConkey's bile salt lactose neutral red agar. Colourless colonies picked off after twenty-four hours were transferred to agar slopes. Fermentation reactions of the organism isolated showed it to belong to the Salmonella group; the splitting of dulcite was, however, considerably protracted. There was no indol production.

Tests were then made with the agglutinating serums made from *B. paratyphosus* B, *B. suipestifer* (*aertrycke*), and *B. enteritidis* Gaertner, prepared by the Lister Institute. The organism under investigation was strongly agglutinated in high dilution by the Gaertner agglutinating serum.

Inoculations of guinea-pigs with an emulsion of the organisms caused death, and *post-mortem* examination showed the presence of haemorrhagic enteritis.

The biochemical and agglutination reactions of the organism recovered from the spleen, liver, and lungs were those of *B. enteritidis* Gaertner.

In my opinion, despite the fact that I was unable to investigate the condition of the patients themselves from the bacteriological point of view, this small outbreak owed its origin to the toxin of *B. enteritidis* Gaertner.

G. STUART,
Assistant Director of Health (L),
Government of Palestine;
Director Public Health Laboratories.

INVERSION OF THE UTERUS TREATED BY HYSTERECTOMY.

A WOMAN, aged 27, admitted to the Jersey General Dispensary on July 7th, 1920, stated that she had begun to menstruate at the age of 15 and that the periods recurred fortnightly and were excessive; she was treated for anaemia, and after a year the function became normal. She had a bad attack of influenza in 1918, but no other illnesses.

On January 25th, 1920, she was delivered by forceps under chloroform; pains were very slight before the birth, but much more severe afterwards; there was not much haemorrhage. On the fifth day after confinement she had retention of urine, and on examination the uterus was found to be inverted, and was replaced without difficulty by the medical attendant. She had attacks of fever and faintness during the six weeks she remained in bed, but no haemorrhage. On rising from her bed she vomited and fainted twice. Two weeks later haemorrhage began; it was slight at first but increased with time until large clots were passed.

I first saw the patient on July 1st, when she complained of metrorrhagia; a soft mass was felt projecting from the os uteri which was taken for a placental polypus.

On July 8th examination under an anaesthetic revealed the true nature of the case; manual replacement was attempted but was found to be impossible. On July 10th laparotomy was performed, and even with the belly open it was found to be impossible to replace the uterine body; amputation was, therefore, performed through the neck of the uterus. The uterus was not enlarged.

On admission to the hospital, on July 7th, the temperature was 100° F., and remained constant till the time of operation. On July 12th it rose to 101° F., and remained at this level, with slight daily remissions, till July 21st, when it rose to 103° F. On July 22nd the temperature reached 104.8° F., and the patient was very exhausted.

On July 24th 30 c.cm. of polyvalent antistreptococcus serum was injected; the temperature rose to 106.4° F., but fell in four hours to 99° F.

For the following four days doses of 20 c.cm. of the serum were injected, the temperature varying between 104° and 98° F.; at the end of this period the temperature became approximately normal and remained so until her discharge on August 15th.

The remarkable features of the case are the absence of uterine enlargement, which was possibly due to the strenuous use of ergot before she came under my observation, and the absence of any marked anaemia.

Jersey. J. J. W. EVANS, F.R.C.S.

THE TREATMENT OF DENTAL CASES.

I VENTURE to publish this short account of two dental cases because medical students are taught very little about dental diseases or inflammatory conditions of the mouth and jaws due to dental trouble, yet dental surgery is a branch of general surgery in the same way as otology or ophthalmology.

CASE I.

A girl, aged 17, complained of swelling and tenderness on the right side of the mandible. The swelling was inflammatory and the doctor she consulted advised poulticing. The swelling burst and a purulent discharge lasted for some time, but eventually healing took place; the scar, however, broke down again in a short time. A dentist who was then consulted came to the conclusion that the girl had originally had an acute alveolar abscess; a considerable area of bone had necrosed and fracture of the jaw had ensued. It took a dental surgeon and a general surgeon over eighteen months to get the patient's chin into correct alignment, and the girl was left with a considerable amount of facial disfigurement.

The mistake here was the applying of fomentations to the outside of the patient's cheek. This practice is mistaken, and invariably leads to a certain amount of disfigurement, and sometimes to even more serious results. Dental students are taught to apply fomentations to the outside of the jaws only in exceptional circumstances. In the above case, if the doctor had had the tooth extracted at once and ordered hot mouth-washes every few hours, the necrosis and disfigurement would not have occurred. It is a sound principle to treat practically all inflammatory swellings of the jaws due to dental sepsis by hot frequent mouth-washes, after, of course, treating the cause. By this method the pus, if any, is drawn into the mouth, and so facial disfigurement is prevented. The exceptional circumstances I refer to are those cases in which the patient is obviously very ill from toxic absorption and drainage is needed at once. In these cases it is better to incise the swellings from the outside.

CASE II.

A woman, aged 50, had been treated for about twelve months for gastritis and intermittent swelling of the joints. In six months her weight fell from 15 st. 2 lb. to 11 st. When I saw her the mouth was extraordinarily clean and healthy for a woman of her age; one or two teeth were missing, but the remaining teeth were clean, strong, and free from caries, and the gums were very healthy. There were three roots present which appeared healthy; the gum was tight and healthy round them, there was no pocket, and the root canal had calcified. I extracted these three roots and found that each of them had a chronic abscess sac at the apex. I prescribed a hydrogen peroxide mouth-wash and told her to return in a month. She was then a different woman; she was cheerful, was putting on weight rapidly, and had had no swellings of the joint since the date of the extractions.

This case is quoted because more harm is caused to the general health by such chronic abscesses than by chronic infection around the necks of the teeth, the pus from which

drains into the mouth. The chronic abscess being under pressure, infection gets directly into the blood stream, and so lowers the patient's whole vitality. This patient's mouth looked quite clean except for these roots, and admittedly even the roots appeared healthy. Her doctor might have suggested that she should have the roots extracted, simply because he knew it is the general rule to get rid of roots, but he would not be likely to think that the whole trouble could be due to the presence of the roots.

J. JAMES, L.D.S., R.C.S.Eng.,
Dental Surgeon to Rotherhithe Hospital;
Late Demonstrator, London Hospital Dental School.

SPONTANEOUS RUPTURE OF THE UTERUS.

A NATIVE woman, aged 29 years, was admitted to hospital in a very weak state, having been in labour for twenty-four hours at her home; she was in a state almost of collapse, and had intense abdominal pain. The appearance of her abdomen was quite abnormal—the outline of the child was easily felt and could be moved about, but this caused great pain, and the case appeared to be either extrauterine pregnancy which had gone to full term, or a ruptured uterus. As her condition was so bad I decided to wait until she rallied. On September 3rd, 1922, I opened the abdomen and found that it was a case of ruptured uterus; the child—full term and well developed—was lying dead in the abdominal cavity amongst the intestines, the placenta partially extruded from a transverse rupture of the uterus. The uterus was sutured and the abdomen closed; I brought the uterus forward and sutured the uterine wound to the abdominal incision for fear of accidents. The patient recovered very slowly, and I discovered that she was suffering from ankylostomiasis; the uraemia and general weakness rapidly cleared up after giving her chenopodium oil, and she was discharged well on October 17th.

Antigua, B.W.I. C. M. ROLSTON, F.R.C.S.Edin.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

CAPE OF GOOD HOPE—WESTERN PROVINCE BRANCH.

A MEETING of the Cape of Good Hope—Western Province Branch was held at the New Somerset Hospital, Cape Town, on April 13th, with the President, Dr. CHARLES M. MURRAY, in the chair. He announced that two demonstration rooms would be conducted simultaneously, the one medical and the other surgical. Mr. C. C. ELLIOTT took charge of the surgical room and Professor A. W. FALCONER of the medical room.

Professor Falconer conducted the medical section to his wards, where he demonstrated cases of amoebiasis, gummatous meningitis, and cerebellar tumour. Dr. D. P. MARAIS showed a case of Addison's disease. Dr. A. REITH FRASER showed a case of granuloma inguinale and one of digital chancre. Mr. D. J. WOOD showed an interesting series of eye conditions, including trachoma, spring catarrh, tubercle of the conjunctiva, chalazion, and an unusual example of glaucoma in a child aged 7.

Mr. C. C. ELLIOTT demonstrated cases of depressed fracture of the skull, depressed fracture of the supra-orbital ridge, malignant growth of the lower eyelid with the operation result, and an operated case of excision of the Gasserian ganglion. Mr. H. A. MOFFAT showed an old dislocation of the head of the radius, a tuberculous elbow, a fracture of head of the radius, and a fractured carpal scaphoid. Mr. C. F. M. SAINT showed an unusual case of psoas abscess with superimposed pneumococcal infection, a duodenal ulcer which presented a difficult diagnostic problem, and a tuberculous shoulder-joint. Radiographs were exhibited by Dr. H. W. REYNOLDS, including several interesting fractures, bone grafts, and cervical ribs. Professor E. C. CRICHTON demonstrated pathological specimens.

The PRESIDENT thanked Dr. A. Carrington Seale and the hospital staff for organizing the meeting and for entertaining the Branch.

Reports of Societies.

ULCERATIVE COLITIS.

A MEETING of the Subsection of Proctology of the Royal Society of Medicine was held on May 9th, under the presidency of Sir CHARTERS SYMONDS. Ulcerative colitis was the subject of discussion.

Sir HUMPHRY ROLLESTON, after referring to Sir William Hale-White's early description of the disease, asked what the term "ulcerative colitis" might mean. Ulceration due to amoebic or bacillary dysentery, to parasites, to known poisons, and so-called asylum colitis (which was often epidemic and appeared to be bacillary dysentery) should be excluded. Ulcerative colitis did not appear to be a disease in the strict sense of the term, but a syndrome with fairly constant structural changes and clinical manifestations. Bacteriologically it was not a specific disease, for it might be due to a colon organism, to *B. pyocyaneus*, to the pneumococcus, streptococcus, or other organism. Some cases beginning as dysentery might cease to show the characteristic organisms in the faeces and become chronic ulcerative colitis. After death, as shown in a case of Dr. McNee's, the organism was still present in the wall of the colon. The opportunities for secondary infection of the colon were most favourable, and various organisms, especially of the colon group and streptococci, might appear to be the responsible factors for the condition. Bacteriological diagnosis of an acute colitis, such as the haemorrhagic type of pneumococcal origin, was less difficult than that of chronic ulcerative colitis. It was possible that a devitaminized diet, as suggested by McCarrison's and Findlay's experiments, might so lower the resistance of the patient, or change the type of organism, as to favour the onset of the disease. There was no proof that ulcerative colitis was related to swine fever. Was the type of the disease changing? It seemed to the speaker that perforation was less frequent now than thirty years ago. Stricture of the colon was rare. Leucocytosis appeared to be inconstant and inquiry as to a relative lymphocytosis was desirable. Sir Humphry Rolleston referred to the diagnosis of the ulceration, which was indistinguishable from that of amoebic dysentery, by the sigmoidoscope and *x* rays. For treatment a sufficient diet should be given. Drugs were not very successful; neither kaolin nor paraffin was completely satisfactory. Injections from below did not clear out the colon as did irrigation by means of appendicostomy. The relative values of appendicostomy, valvular caecostomy, colotomy, ileo-sigmoidostomy, ileostomy, and ileostomy with a separate appendicostomy, were briefly discussed. Vaccines had not enjoyed a very pronounced success. The use of anti-dysenteric serum, advocated by H. P. Hawkins in 1909, had been dramatically successful when given intravenously by A. F. Hurst, but, as evidence that the patients had bacillary dysentery was not forthcoming, it would be interesting to speculate if normal horse serum would not have been equally efficient.

Sir THOMAS HORDER remarked that he might have made more dogmatic statements with regard to this condition ten years ago. In his experience ulcerative colitis was found more commonly in women. Of ten recent cases eight were in the female sex; of five hospital cases only one was a male. The disease favoured young middle age—25 to 35. Among etiological factors he would mention enteroptosis, circulatory factors, and infections. Some of the patients would be found to have a cardiac lesion dating from an infection. With regard to bacteriology he would have said that streptococcal infection—not only *Streptococcus faecalis* or *viridans*, but also long-chained streptococci—should have come first, with the colon bacillus much later. He would mention certain clinical points. There was often an intense degree of anaemia. The spleen was sometimes enlarged, and this might be due to an infarct that did not suppurate. The liver might be enlarged. In one case in which he had had the opportunity of seeing the organ during caecostomy it was pale and fatty and reached nearly to the umbilicus. Within two months of the operation it had gone back to its normal level. The condition tended to recur. The doctor was often called in after there had occurred many attacks. Quite a number of people having normal-looking stools

suffered from chronic ulceration. When the physician thought he had cured the patient and looked through the sigmoidoscope, frequently there were still many ulcers present. What determined recurrence? He thought that ulcerative colitis was not so much a disease of the colon as a disease of the patient. It was a condition due to low resistance, as were phthisis and malignant endocarditis. With regard to treatment, if the patient were in such a condition that operative treatment must be tried, the colon might be drained by an appendicostomy or a caecostomy. If this had already been done he recommended treatment as for pulmonary tuberculosis, in bed, and in the open air. The diet should be the fullest the patient could comfortably manage without increasing the diarrhoea. A milk diet, not including casein, should be increased to a full diet; it should not be kept as low as possible. Tonics were useful. Vaccines could be used as supplementary treatment; he did not rely upon them. To sum up, the condition was a disease of low resistance. General methods of treatment should be adopted, supplemented perhaps by appendicostomy. There must be a long convalescence; for three months after the patient was up and about there should be no return to work.

Mr. P. LOCKHART-MUMMERY said that when the condition was discussed in 1909 there was a mortality of 50 per cent. Now the mortality had gone down to 15.7 per cent. Ulceration of the colon might be slight and localized to a few small patches or might involve the entire colon. The bacteriology of the condition was still very vague. Secondary infection was common. The paratyphoid group was often present, sometimes with and sometimes without streptococci. There were, he felt, great possibilities in the future for appendicostomy with replacement of organisms. He agreed that at present vaccine treatment was of little effect. The disease was one of early adult life; the average age was 32. The sex incidence was about equal. Diagnosis was by the sigmoidoscope. Stricture of the colon after the condition was very rare. There were more cases of this complication after caecostomy than after appendicostomy. An advantage of appendicostomy was that it could be done under local anaesthesia. The appendix should not be opened till the abdominal wall was healed. A catheter ought to be tied into the appendix. The fluid introduced should be at body temperature. The best he had found to be hypertonic solution of sea-salt. Weak silver solutions and solutions containing oil were sometimes successful. The appendicostomy should be performed early, and it should on no account be closed for a year. The patient should be warned of the danger of recurrence.

Dr. W. E. CARNEGIE DICKSON said that even if the ulceration should be due originally and primarily to one specific type of organism it speedily became a mixed infection in which a whole series of bacteria took part in attacking the bowel wall. Consequently it was generally necessary to treat the condition as one of mixed infection. It was important to remember this in treatment with vaccines or serums. In some forms of bacillary dysentery in which a vaccine made from the dysentery bacilli might not be suitable because of its great toxicity the specific serum might with advantage be used along with a mixed vaccine made from the organisms of secondary infection. In the old days it had been his custom to prepare a vaccine from some single organism which was thought to be the primary or the chief infective agent. He now used a widely varying series of culture media and from them, by selection, obtained a bacterial emulsion approximating to the organism found in direct films. A bacteriological report founded upon a single agar plate of the faeces was of little value and might be quite absurd. His own practice was to put on as a routine a series of agar, blood agar, broth, blood broth, anaerobic meat broth, litmus-milk, MacConkey lactose agar, and sometimes other media; and there were extraordinary differences in the variety and number of the various organisms grown from faeces in these different media. From them one might average up the results of the whole investigation. A bacteriologist needed three weeks, a month, or more to isolate his organisms in pure culture and give them long enough in the differential media to be certain of their biological reaction. Cultures after a week or longer showed a very different picture from the result after three days, which was about the time a pathologist usually had to make his report. *B. pyocyaneus*, difficult to recognize since it needed such copious supplies of oxygen to bring out its characteristic pigment, he regarded as being of great importance. Septic foci, especially in septic teeth, tonsils, nasal sinuses, and the appendix must be constantly remembered. In his own series of blood counts in such cases the speaker had usually found a leucopenia, the diminution affecting especially the polymorphs and thus producing a relative lymphocytosis and a secondary anaemia, especially a haemoglobinaemia. He agreed with Sir Thomas Horder in the occurrence of leucopenia in very chronic streptococcal and in coli-typhoid-paratyphoid infections. He had also observed that injections of normal horse serum in such cases of leucopenia often brought about a rise to normal of the leucocytes or even a distinct leucocytosis.

Professor L. S. DUDGEON's paper was read in his absence. He was opposed to the view that ulcerative colitis and true dysentery were of necessity caused by the same specific organism. He felt that in all cases diagnosed as ulcerative colitis the following lines of investigation should be followed: (1) examination of the bowel by means of the sigmoidoscope; (2) bacteriological and protozoological examination of material from the floor of the ulcer or ulcers; (3) repeated examination of faeces; (4) examination of blood, more especially in relation to the presence of immune substances in the serum.

Dr. A. F. HURST said that Vedder and Duval, working under Flexner in 1902, found that epidemics of dysentery occurring in American institutions were caused by *B. dysenteriae*, and two years later Eyre showed that asylum dysentery in England was also caused by this organism. All attempts to isolate the bacillus from sporadic cases had failed, though in a small number of cases the blood had been strongly agglutinated by Flexner's bacillus. In diagnosis a growth within reach of the finger must first be excluded; then the sigmoidoscope should be used. Amoebic dysentery must still be considered even if examinations of the stools had been negative. He had seen a few cases in which this infection developed in England. An anaesthetic was only rarely necessary. The passage of the instrument did not cause pain unless the anal canal was inflamed, in which case a cocaine sempule should be introduced a quarter of an hour before. If the sigmoidoscope were carefully introduced under visual guidance without inflation there was no danger. The few cases in which perforation had occurred had all apparently been due to the blind passage of the instrument. In ulcerative colitis the mucous membrane was bright red and thick; it bled easily when touched, and its surface was covered with blood-stained purulent mucus. The swelling of the mucous membrane was particularly noticeable in the normally thin Houston's folds. Ulceration might be slight or very extensive. Sometimes small islets of mucous membrane were left which, on rectal examination, might feel like small flat polypi. It was easy to mistake the floor of the ulcer for the surface of the mucous membrane. The ulcers were superficial, and had irregular, but not undermined edges. Their floor appeared greyish-yellow when wiped free from blood and mucus. The rectum and lower part of the pelvic colon were sometimes inflamed alone, but it was doubtful if the proximal part of the colon was ever involved without the pelvic colon and rectum. The differences between the sigmoidoscopic appearances of the mucous membranes in amoebic and bacillary dysentery were very marked; but the appearance of the mucous membrane in bacillary dysentery was indistinguishable in life, as Wilks had observed *post mortem*, from that of the sporadic ulcerative colitis occurring in England. In amoebic dysentery small round red elevations were seen on the otherwise normal-looking mucous membrane, corresponding to the collection of broken-down material in the submucous tissue caused by *Entamoeba histolytica*. In the centre of each elevation was a depressed yellowish ulcer caused by the rupture of the submucous abscess through the mucous membrane. The speaker had obtained remarkably good results through the intravenous injection of large doses of polyvalent antidysenteric serum. These results were not due entirely to the use of horse serum, but were definitely specific. In one similar case he had tried large doses of horse serum. No improvement resulted, but the administration of antidysenteric serum after a week's interval led to the usual

rapidly favourable results. He generally began with an injection of 40 c.cm. intravenously, followed on consecutive days by injections of 60, 80, and 100 c.cm. It might be necessary to repeat the maximum dose two or three times. A rise in the patient's temperature, a profuse erythematous rash, pain and swelling in the joints, often indicated a severe reaction which usually only lasted a few hours and never longer than a few days. The reaction was less likely to occur if 15 grains of calcium lactate were given three times a day the day before and during the days of treatment. Precautions against anaphylaxis were taken in patients who had previously had serum or in one who was subject to asthma. He had used this treatment in about ten cases. Very rapid improvement had always occurred, though in one case in which appendicostomy had been performed some months before it was incomplete. A secondary streptococcal infection had apparently become grafted upon the original dysenteric infection, as complete recovery only took place after the removal of the teeth, which was followed by a temporary severe local reaction. An attempt to treat this patient with a vaccine prepared from streptococci isolated from the stools had to be given up owing to the violent reaction which followed the injection of only a quarter of a million bacteria. His colleague, Dr. J. A. Ryle, obtained an equally satisfactory result in one case under his care. The treatment failed in two, but in both of these he recognized the ulcerative colitis as being of a hypertrophic character quite different from the ordinary type, so that in all probability it was caused by a different infection. One of these cases died shortly afterwards from perforation, which rarely, if ever, occurred in the usual form of ulcerative colitis, and in the other an appendicostomy, which was subsequently performed, led to no further improvement. In most cases the improvement was as rapid as that of amoebic dysentery with emetine, and epidemic bacillary dysentery with intravenous antidysenteric serum. In his first case the patient was so ill when he first saw him that he advised an immediate appendicostomy. In spite of this he went steadily downhill, and a fortnight later, when the first injection was given, his condition appeared to be almost hopeless. But in three days the blood had disappeared from the stools, in five the sigmoidoscope showed that the mucous membrane was entirely free from ulcers though still a little red, and in ten days the stools were normal and the mucous membrane was perfectly healthy, though the ulceration before the first injection was the most extensive he had ever seen. Treatment by rest, diet, albargin injections, and charcoal was of great importance before the introduction of serum treatment, but recovery was very slow. He had been inclined, therefore, till three years ago to advise appendicostomy as an additional measure in all severe cases. Since he had used large doses of serum he had not found it necessary to advise appendicostomy in a single case, and only occasionally had he used albargin injections. There were some cases, as in the two of Dr. Ryle's, in which the pathology was different and in which other methods of medical treatment with appendicostomy would be required. No case could be regarded as cured until the sigmoidoscope showed the mucous membrane to be perfectly healthy. Then the stools must be kept soft by paraffin or saline aperients for several weeks until the newly formed mucous membrane had overcome its original vulnerability to mechanical irritation. The sigmoidoscope should be used by every physician.

Sir CHARLES GORDON WATSON felt that antidiphtheritic serum had not yet been given a fair trial. Appendicostomy was the operation of choice. If this operation was performed early enough it offered a sure cure. But on no account should the appendicostomy be closed too early. He preferred flavine for his washes. The primary focus should be carefully sought, and, if discovered, should be treated.

TREATMENT OF DIABETES WITH INSULIN.

AT a meeting of the Edinburgh Medico-Chirurgical Society on May 2nd, with the President, Sir ROBERT PHILIP, in the chair, a communication was given by Professor J. C. MEAKINS, in collaboration with Mr. W. ROBSON, Dr. C. G. LAMBIE, and Dr. H. W. DAVIES, on the treatment of diabetes with insulin.

Professor Meakins introduced the subject by describing the discovery of insulin, referring to the work of Scott, Banting, and Macleod. Mr. Robson then described in detail the chemical processes involved in the preparation of insulin, its chief sources being the pancreas of the ox, sheep, or pig. Dr. Lambie dealt with the effect on the blood sugar curve in animals and also with the standardization of dosage. In the experimental work rabbits were the animals employed. Charts were shown indicating the effects on the blood sugar curve of injections of insulin; where the blood sugar fell to about 30 mg. per cent. harmful symptoms, similar to those produced by an overdose in man, were observed; the animals became somnolent and developed twitchings, followed by convulsive seizures and coma. By the injection of glucose, 3 grams in 10 c.cm. of water, these symptoms were speedily relieved, otherwise death occurred. As regards standardization of dosage, as there were no means of determining this chemically, it was necessary to rely on biological experiment. In animals, however, great individual variation in susceptibility was observed. To overcome this it was necessary to use at least three animals of the same weight and whose reaction had already been tested. The animal was starved for twenty-four hours preceding injection, and the blood sugar estimated immediately before and two hours after injection. The dose which produced convulsions within four hours or which would reduce the blood sugar to convulsive level was known as "one rabbit dose." This was equivalent to four "American" units. The human dose was two and a half rabbit doses or ten American units. Dr. H. W. Davies then showed numerous charts illustrating the effects of insulin with or without glucose on the blood sugar curve of normal man and of diabetics, and its effects on acidosis and lipaemia. In normal man ten units of insulin produced a comparatively small drop in blood sugar as contrasted with a marked fall in the diabetic, this last being accompanied by a pronounced rise in the alkali reserve. Professor Meakins then dealt with the effect of insulin on carbohydrate metabolism in diabetics, demonstrating how its administration increased the retention of carbohydrate. He also spoke of the possible dangers of the drug, if the blood sugar content were allowed to fall too low, this being indicated by somnolence, delirium, twitchings, followed by convulsions and coma. These symptoms were most apt to occur four or five hours after the previous meal, when the carbohydrate was used up and the effect of insulin remained. Relief was at once obtained by the intravenous injection of glucose. Patients going out should be warned of the nature of these symptoms, and be instructed to carry some carbohydrate with them—an oatcake or a lump of sugar would do. The importance of combining insulin with dietetic treatment was emphasized. Finally, the beneficial effects of treatment with insulin were mentioned. There was an increased sense of well-being and, apart from oedema, a prompt increase in weight. The introduction of insulin made operation on the diabetic possible.

The communication was discussed by the PRESIDENT, Dr. CHALMERS WATSON, and Dr. KEPPIE PATERSON.

Organization in the Treatment of Lupus Vulgaris.

A communication was read by Dr. ROBERT AITKEN on the benefits of organization in the treatment of lupus vulgaris. Dr. Aitken mentioned that the difficulties of treating lupus were greatly enhanced by the lack of control over the patient. A clinic at which only lupus patients attended was instituted to minimize this difficulty, and the method of controlling the attendance of the patients was indicated. Such a clinic had advantages for the physician and also for the patient. The physician could compare the value of the various remedies more thoroughly, while the moral effect of such a clinic on the patient was hardly to be exaggerated. Another advantage was the ease with which other investigations could be carried out. The treatment carried out at the clinic was next described, special reference being made to tuberculin injections. The results of treatment at the clinic were gratifying, the greater number of the patients being much benefited even when the attendance had been only for a short time. Statistics of the cures before and after the institution of

the clinic were given. The communication was illustrated by lantern slides showing the results of treatment in a few representative cases.

The PRESIDENT agreed as to the value of tuberculin, and made a plea for the percutaneous method of administration. The paper was also discussed by Dr. FREDERICK GARDINER, who spoke of the use of the arc lamp, and by Sir NORMAN WALKER. The latter emphasized the importance of early diagnosis and of perseverance in treatment, and said that the patient must be impressed with the seriousness of the disease and required to attend regularly. He strongly condemned the employment of *x* rays in treatment.

THE COLLOIDAL ALKALINE RESERVE OF THE BLOOD.

THE Section of Anatomy and Physiology of the Royal Academy of Medicine in Ireland met on May 4th, with Professor EVATT, in the absence of the President of the Section, in the chair, when Professor T. H. MILROY read a paper on the colloidal alkaline reserve of the blood.

Professor Milroy said that it was well recognized that the main alkaline salt of the blood plasma was sodium bicarbonate and that the steady reaction of the blood depended upon the constancy of the ratio of the free carbonic acid to the bicarbonate. The means by which living organisms maintained this ratio had attracted much attention, especially in regard to the renal and respiratory regulator mechanism. In addition to these modes of regulation there was another which undoubtedly played an important part—namely, the colloidal alkali store of the blood proteins. Many years ago it was recognized that on passing carbon dioxide through blood serum, and still more when the gas was passed through whole blood, the alkalinity of the fluid was increased. This increase was due to the removal of base from the plasma proteins and especially from the acid groups of the haemoglobin molecules. In this way, from one litre of plasma might be obtained 0.01 M base, and from one litre of whole blood 0.025 to 0.03 M base. Just as carbonic acid could remove base from these sources, other weak acids, such as cacodylic and even boric, were effective. The amount removed followed generally the law governing the distribution of bases between the competing acids in homogeneous solutions. The avidity of the acids for base was determined by their acid dissociation constants and by their respective concentrations. The blood colloids were removed by a method of ultra-filtration through thin collodion plates under pressure. The ultra-filtrates so obtained were quite colourless and suitable for determination of the reaction by indicator and other methods, and were free from any disturbing effects due to proteins. For this investigation it was necessary to examine the ultra-filtrates of different blood specimens before and after the addition of different acids of various concentrations. The methods employed were explained and a brief account of the results obtained was also given.

The CHAIRMAN thanked Professor Milroy for his kindness in coming to Belfast to present his important communication to the members of the Academy. Professor PRINGLE, in discussing the paper, speculated on the influence of the permeability of the stroma of the red corpuscles in affecting the fixation of acids. Dr. FEARON considered the possibility of a Donnan membrane equilibrium effect interfering with the alkali values of the ultra-filtrates. Professor MILROY, in reply, explained that he had eliminated the permeability effect by working only with laked blood. By a comparison of various ultra-filtrates, he had satisfied himself that no error was introduced by a Donnan effect.

Professor E. A. WERNER read a note on the precipitation of urea from urine. He said that when an equal volume of strong nitric acid was added to a 2 per cent. aqueous solution of urea, 59.1 per cent. was precipitated on standing as urea nitrate. A 4 per cent. urea solution similarly treated yielded 73.7 per cent. of urea nitrate. On the other hand, many samples of urine containing 2 per cent. and upwards of urea yielded no precipitate of urea nitrate when similarly treated. This was probably due to the protective influence of urinary colloids, since a 0.2 per cent. gelatin solution would retard the precipitation of urea nitrate. This suggested a possible method for the determination of the colloidal matter in urine. The communication was briefly discussed by Professor SCOTT, Professor MILROY, and Dr. SPEARES.

Professor PRINGLE showed an apparent case of multiple ova in a single Graafian follicle from a rabbit's ovary. Instances of two and three ova had been previously recorded, but the present follicle appeared to contain fifteen, which made him somewhat doubtful as to their true nature. Professor SCOTT told of an occurrence of double ova in single follicles in a rabbit he had examined some years previously, and outlined the probable embryonic cause of such a condition. He could not, however, account for fifteen.

Professor DIXON exhibited sections of the earliest human embryo which he had encountered. The chief structures were described and illustrated by microscopic preparations and by diagrams.

Dr. FEARON demonstrated the benzaldehyde test for tryptophane, which could be applied to all proteins containing that amino-acid.

GALL STONES.

AT a meeting of the West Kent Medico-Chirurgical Society at the Miller Hospital, Greenwich, on April 13th, Mr. C. A. JOLL delivered a lecture on the diagnosis and treatment of gall stones. They might occur at any age, and he had had six patients under the age of 22—the youngest was 14½ years, and she had been treated as a neurotic for two years. Gall stones were common in the prime of life, and two-thirds of the cases were in women; frequently they were the result of infection. The symptoms were repeated bilious attacks, indigestion, flatulence, a feeling of undue fullness, nausea in the middle of a meal, sometimes a feeling of chilliness. The attacks had no relation to the time of taking any particular food. Half of the cases did not have biliary colic. Referred pain occurred at the point of the shoulder and the angle of the scapula, sometimes in the region of the lower right ribs. Robson's sign was elicited by standing behind the patient and pressing both sides under the costal margin, when pain occurred in the gall bladder. Jaundice was found in 21 per cent. of the cases. Pyrexia was uncommon, and when it did occur it was due to infection. In a small group of cases there was no pain, but obstruction came on suddenly; the gall stones in such cases were mostly single cholesterin stones unassociated with infection. Some cases had chronic indigestion and no pain, some had biliary colic only, some indigestion only. Medical treatment was futile. The intervention of the surgeon was necessary to prevent damage to the liver. Operation should be avoided in acute cholecystitis. Calcium was of use only when given intravenously; 5 c.cm. of a 10 per cent. solution was given for three days before operation. Drains should be inserted in all cases, and the cystic artery should be tied separately. Patients suffered no ill effects from the removal of the gall bladder; if it were left pain might return, but it should be left in chronic pancreatitis. Carcinoma was associated with stone. Drs. PURVIS, BUCHAN, HUDSON EVANS, PAYNE, KNIGHT, M. DAVIDSON, WHITE, BAIN, and QUINN took part in the subsequent discussion.

CYSTOSCOPY AND PYELOGRAPHY.

A MEETING of the Liverpool Medical Institution was held on April 26th, with the President, Professor J. HILL ABRAM, in the chair, when Mr. F. STRONG HEANEY read a short paper on cystoscopy and pyelography. Mr. Heaney briefly reviewed the present position of cystoscopy and pyelography in the diagnosis of diseases of the bladder, ureters, and kidneys. He showed by means of a series of lantern slides how cystoscopy by itself excluded the bladder and localized one or other kidney as the active septic focus in certain cases of chronic pyuria. He pointed out that in the absence of tubercle bacilli in the urine cystoscopic examination in conjunction with clinical signs enabled one to make a definite diagnosis of tuberculous

kidney. The appearance at the ureteral orifice in cases of intramural ureteral calculus altered when the stone remained a considerable time *in situ*. In some cases of hydronephrosis it was not possible, he said, to demonstrate the condition by aspiration, whereas a pyelogram might successfully overcome the difficulties of diagnosis. In cases of obstruction the appearances of the ureterogram or pyelogram varied according to the level of the obstruction. He showed how a ureterogram differentiated between a phlebolith or mesenteric gland and a ureteral calculus, and how the normal pyelogram enabled one to exclude the possibility of a kidney condition in favour of other intra-abdominal lesions.

Mr. J. ST. GEORGE WILSON read a note on bronchopneumonia in a stillborn foetus associated with maternal death.

The mother was a 14-para, aged 49; all previous labours had been normal. The membranes ruptured thirty hours before the onset of labour, and the first stage occupied three hours. Forceps extraction failed. As the cord was prolapsed and pulseless the foetus was perforated, but there was still failure to deliver. The mother died five and a half hours after the onset of labour, owing to shock.

The foetus weighed 4.72 kg.; bronchopneumonia was demonstrated in both lungs, and streptococci were found in the alveoli and cultured from the spleen. The reaction in the lungs was so marked that the inference drawn was that pneumonia commenced before the onset of labour, and it was surmised, in the absence of *post-mortem* examination, that foetal infection was a contributory cause to, if not the sole cause of, the sudden death of the mother.

Dr. NORMAN B. CAPON stated that caution was necessary in assuming that micro-organisms found in a foetus which had died during labour were responsible for any pathological lesion discovered. This was especially true when perforation had been performed.

Dr. J. MURRAY BLIGH read a paper on unexpected death in children. He discussed in particular its relation to lymphatism and the clinical signs indicative of that condition.

Reviews.

DISEASES OF THE GUMS AND ORAL MUCOUS MEMBRANE.

IN *Diseases of the Gums and Oral Mucous Membrane*[1] Sir KENNETH GOADBY summarizes the results of many years of clinical and laboratory observation and research. It is interesting, therefore, to find him emphatically endorsing the opinion that "pyorrhoea alveolaris" is primarily a disease of the gums, owing its initiation to infection of the gum tissue around the necks of the teeth, and beginning as a mild but chronic infection of the gingival margin. He does not, however, belittle the predisposing factors. On the contrary, arguing from the analogy of scurvy, beri-beri, and rickets, and from the alveolar bone and gum changes found in dogs fed on a "deficiency diet," he is inclined to credit vitamin deficiency with an important part in the production of pyorrhoea. The suggestion may be valuable, but so far it is only a suggestion, and the author has not attempted to indicate where the deficiency is to be looked for, although he refers specifically to peeled potatoes.

Throughout the book there are frequent proofs of originality of thought and close clinical observation. As instances of the latter we may quote his description of the gums in lymphatic leukaemia and of the mouth in sprue; as an instance of the former his interpretation of certain *x*-ray appearances may be cited, though it probably runs counter to the opinion of most radiologists. Pathologists may ask what is meant by "acute hypertrophic gingivitis."

The chapter on diagnosis contains many useful passages. Perhaps the most interesting is a table of blood counts contrasting the blood changes found in early suppurative periodontitis (pyorrhoea) with those found in later stages accompanied by periarticular rheumatism, or by rheumatoid arthritis. The author insists on the use of a hand glass in examining the gums, and on the value of microscope smears to determine the origin of pus. In discussing disease originating from mouth affections the suggestion is made that, so commonly are joint diseases due to chronic streptococcal infections, were a satisfactory polyvalent antigen evolved vaccination against streptococcal arthritis would become as common as vaccination against small-pox. Considerable importance is attached to the use of an antigen prepared from the infecting mouth organism before any extraction of teeth, and cases of "delayed infection" are cited in which it is suggested that the explanation is a subinfection due to the extraction of teeth. Such cases might be avoided by previous immunization, but we do not get a very clear idea of how to select the proper organism from the brief account the author gives of this important point.

In the chapter on periodontal disease Sir Kenneth Goadby expresses strong dissent from the view that pyorrhoea is a disease arising around the apices of the teeth and of a non-inflammatory nature. The microscopical appearances which have been invoked in support of this view he finds equally explicable as the result of an irritant and compares them to the changes found in the tissues in the immediate neighbourhood of the advance of gas gangrene. He points out also that in the deep pockets of "pyorrhoea" there are always considerable numbers of anaerobic bacteria, especially bacteria associated with Vincent's angina or necrotic stomatitis.

Though, perhaps, interest and criticism will chiefly centre round the author's views on periodontal infection ("pyorrhoea" to the vulgar), there are other chapters also which will challenge attention. Those on ulcerations of the gums, on special diseases of the mouth and gums, and on diseases with oral symptoms are of great interest; they are all written from personal observation. It is not quite clear why tumours, both innocent and malignant, should be included under ulcerations of the gums, and it may be noted that a ranula has perhaps other modes of origin than a blocked sublingual duct.

Throughout the book will be found notes and indications for treatment which cannot fail to be of interest and use to the practitioner, dentist, or doctor dealing with the conditions described. We doubt, however, whether many will be found bold enough to follow the advice given on page 117, to make punctures with the electric cautery into the cancellous interdental bone for the cure of early patches of rarefying osteitis. The work of others is freely quoted and references given.

The book is rather marred by the not infrequent occurrence of somewhat obscure passages. We may cite "the tongue turns round and round in the minor axis of an ellipse, and its edges perform simple harmonic motion in relation to the position of the teeth"; and we may ask, how do inflammatory masses pass from the surface of a traumatic ulcer through the epithelium deeply into the tissues below?

But whatever its faults the book is well worth the attention both of the dentist and of the general practitioner.

[1] *Diseases of the Gums and Oral Mucous Membrane.* By Kenneth Goadby, K.B.E., M.R.C.S., L.R.C.P., D.P.H.Cantab. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1923. (Roy. 8vo, pp. xvi + 383; 105 figures, 8 plates. £2 2s. net.)

TROPICAL DISEASES.

WITH the appearance of Volume III, *The Practice of Medicine in the Tropics*,[2] edited by Lieut.-Colonel BYAM and Major ARCHIBALD, is completed. The text of the three volumes fills over two thousand five hundred pages, and in addition there is an Index of Authors and a General Index to each volume. An excellent portrait of Major-General Gorgas forms the frontispiece of the third volume, which contains also thirty coloured plates of considerable merit. A large number of authors contribute the different articles. To helminthiasis (Section XI) 280 pages is allotted, and as the subject is dealt with in considerable detail this is not too much, especially when we remember the many and various diseases to which infestation with worms may give rise. There may be some difference of opinion as regards the

[2] *The Practice of Medicine in the Tropics*, by many authorities. Edited by Lieut.-Colonel W. Byam, O.B.E., R.A.M.C. (retired), and Major R. G. Archibald, D.S.O., R.A.M.C. (retired). Volume III. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1923. (Roy. 8vo, pp. xx + 855; 348 figures, 30 plates. Price of the complete work £4 4s.)

classification adopted and some of the names employed, but this was probably inevitable. In the section on disorders of metabolism is an article on deficiency diseases by Lieut.-Colonel Vedder dealing with scurvy, beri-beri, and epidemic dropsy. Apparently the right of pellagra to a place amongst the true deficiency diseases is still in doubt; it is discussed in a separate chapter by Dr. G. M. Niles, who is by no means emphatic on the subject, contenting himself with saying "the hypothesis that pellagra is caused by a deficiency is very plausible, and must be taken into consideration in subsequent studies of this disease." A chapter is given to typhus fever, though it is not strictly a tropical disease. In the section on diseases of doubtful causation a fascinating summary is given of the present state of knowledge with regard to *Rickettsia prowazeki*, and Dr. Byam in an interesting chapter on trench fever deals with bodies of this nature in their relation to that disease. The study of rickettsia bodies is full of promise and of great interest to all workers on these diseases. A chapter on another interesting disease, tsutsugamushi, or Japanese river fever, follows that on trench fever, and is from the pen of Professor Nagayo of the Imperial University, Tokyo. He states that the symptoms of the malady are suggestive of typhus and Rocky Mountain spotted fever, but present some distinct features. The nature of the causative agent is not yet established with certainty, though it is known that a mite *Trombicula akamushi* transmits the virus; the subject is illustrated by a very good coloured plate of the primary lesion or ulcer. The possibility that the disease is due to a rickettsia is not mentioned. Dengue and phlebotomus fever are classed among diseases of doubtful causation, and no mention as far as we can find is made of the *Leptospira hebdomadalis*, of Japanese seven-day fever, nor of Whittingham's discovery of leptospirata in phlebotomus fever. Perhaps the work went to press before these observations were published. The subject of diarrhoeas in the tropics is treated in the section on regional diseases, though why it should be placed here is not very clear. Ophthalmology, the heart in chronic tropical disease, skin diseases, and diseases of women are all dealt with. The section on surgery is illustrated by some wonderful photographs of tumours and of an extraordinary example of Egyptian splenomegaly. In such a large and massive work as this slight mistakes in spelling and so on are difficult to avoid, but on the whole they are wonderfully few, and those that have been observed are not perhaps of extreme importance. Contentious matters arise in some of the articles, but the authors may reply, "Quot homines, tot sententiae." The standard throughout the three volumes is of the highest and the articles have been written by men thoroughly conversant with the subjects they have dealt with. The work will, we believe, become the standard book of reference on the subject throughout the English-speaking nations. All that remains is heartily to congratulate the editors on the completion of their laborious though interesting task, and to assure them that the hope they express that they have compiled an authoritative work which will familiarize students with the names, work, and lines of thought of many of the leading tropical investigators is well founded.

Framboesia tropica (*Parangi of Ceylon*)[3] is the title of a useful little monograph on yaws, by Dr. R. L. SPITTEL, F.R.C.S., Surgeon to the General Hospital, Colombo. In the preface he states that it professes to be nothing more than a clinical study of framboesia, or parangi, as met with in Ceylon, and that historical and experimental data are omitted. There are no chapters nor index, the whole being contained in some sixty pages. Even so, an index would have been of value. The photographs of the disease are the main feature of the book. They are not only numerous but of excellent quality and illustrate the points of the disease in an admirable manner. Fig. 23 (p. 31) very much resembles gangosa, a disease not admitted by all to be tertiary yaws. Students of the subject will be interested in the book.

[3] *Framboesia tropica (Parangi of Ceylon).* By R. L. Spittel, F.R.C.S.Eng. London: Baillière, Tindall, and Cox. 1923. (Demy 8vo, pp. iv + 59; 39 figures. 5s. net.)

The fifth edition of DANIELS and NEWHAM'S *Laboratory Studies in Tropical Medicine*[4] is in its style and general tone unchanged, but the text has been revised and some new diagrams and figures inserted. The number of pages remains much as before, but there are now twenty-nine chapters instead of twenty-four, with an appendix. Two chapters are given to normal blood and its study, one to abnormal blood conditions, one to blood plasma and serum, and three to protozoa in the blood. The term "intestinal parasites" has been dropped; they are considered under the heading of helminthic parasites. Insects are dealt with in eight chapters, and the last chapter is a survey of malaria. It will thus be seen that a large amount of material is dealt with, and in fact the realms of bacteriology, protozoology, helminthology, and entomology are all explored in a more than cursory manner. The work is intended especially for the student taking out the course at the London School of Tropical Medicine, and for those preparing for the Diploma of Tropical Medicine and Hygiene. In such a work the greatest accuracy is necessary, as otherwise mistakes may be perpetuated. An analysis of many of the scientific names that occur throughout the text shows that the rules of zoological nomenclature have not been strictly adhered to. Most of these lapses, which will grieve the purist, occur in the part dealing with the helminths. Schistosoma is rendered Schistosomum—a mistake; buski should read buskii; *Taenia echinococcus* (p. 304) should be *Echinococcus granulosus;* gnathostomum should read gnathostoma (p. 33); and the name oxyuris has been changed to enterobius. The generic name of the chigger is now, as pointed out by Rothschild, no longer dermatophilus, but tunga, and so on. The method of performing the Wassermann reaction described on pages 112 to 118 is not one of the four standard methods recommended in the Medical Research Council's report on the subject; one or all of these should be given in a future edition, so that the worker may make his choice of an accurate and thoroughly reliable method. In future editions it would, we think, be an advantage to put the headings in darker and heavier type, as this expedient would render it easier to pick up and remember the special points. The chapter on intestinal protozoa is now illustrated by Dobell's figures of the intestinal amoebae and flagellates, which are, of course, excellent; there are also many other diagrams and some useful coloured plates. There is room, then, for improvement in certain directions, for a student's handbook should be, above all things, strictly accurate, and it is with the intention of helping the authors that we have made these observations. Speaking generally, the new edition is a thoroughly practical guide to the student of tropical medicine and is sure to maintain the popularity previous editions have enjoyed.

THE BLOOD SUPPLY TO THE HEART.

AN inquiry into the circulation of the heart in its relation to age periods and pathological variations has led Dr. GROSS, in his monograph entitled *The Blood Supply to the Heart*,[5] to present us with a work that has outstepped its original limits, and to supply us with many facts which have a very definite clinical bearing.

The author has developed a technique for the preparation of his specimens which has given excellent results, if we may judge by the numerous photographs which illustrate the book. For general purposes barium sulphate gelatin has been used as the injecting medium, after which the hearts were *x*-rayed, then cleared, finally dissected and sectioned. For special purposes, as for the capillaries, carmine gelatin has been used. Full details of the methods are given.

Two chapters deal with the blood supply to the auricles and ventricles. The supply to the auricles is specially prone to variation, so that the picture of the average

[4] *Laboratory Studies in Tropical Medicine.* By C. W. Daniels, M.B.Camb. F.R.C.P.Lond., and H. B. Newham, C.M.G., M.D.Durh., M.R.C.P.Lond., D.P.H.Camb., D.T.M. and H.Camb. Fifth edition. London: John Bale, Sons and Danielsson, Ltd. 1923. (Demy 8vo, pp. xiii + 576; 184 figures, 7 plates. 25s. net.)

[5] *The Blood Supply to the Heart.* By Louis Gross, M.D., C.M., Douglas Fellow in Pathology, McGill University. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton, 1923. (Imp. 8vo, pp. xvi + 171; 29 plates, 5 figures. 25s. net.)

auricular supply cannot be given. Thus in 44 per cent. of cases both auricles received their chief supply from the right coronary; in 36 per cent. from both coronaries; and in 20 per cent. from the left coronary. The supply to the ventricles is more constant, though no clear line of demarcation can be drawn owing to the overlapping of the arteries and to the profuse and abundant anastomoses. In general the right coronary supplies the whole of the right ventricle with the exception of the left third of the anterior wall, and also the right half of the posterior wall of the left ventricle and the posterior part of the intraventricular septum. The left coronary supplies the remainder. The blood supply to the neuro-muscular tissues receives separate attention. A special supply is described, though the supply from the two coronaries is varible. Thus the *s-a* node is supplied by the right vessel in 60 per cent. of the cases, while the *a-v* node, the bundle, and main branches receive blood from the same vessel in 92 per cent. of the cases.

The subject of endocarditis is illuminated by the author's study of the vascularity of the valves and the discussion of previous work along similar lines. It is shown that the vascularity and muscularity of these structures diminish as age advances, and few cases have been injected after the age of 30 years; the aortic cusp of the mitral valve is the last to lose its blood vessels; in foetal hearts the blood supply is greater on the right than on the left side. A discussion of the possible connexion between these facts and the relative frequency of valvulitis in early life, the special liability of the mitral valve to be affected, and the right-sided valve defects of the newborn, is very suggestive, more particularly when related to the view that the infection comes by the coronary supply.

The blood supply of the heart at different ages is discussed, and some interesting facts are brought to light. Dr. Gross sees in the increasing vascularity of the adipose tissue as age advances something approaching a compensatory mechanism, as it may function as a source of supply to the underlying muscle.

The illustrations are very well produced, but just because of the wealth of detail a pointer in some of them would have added to their value. The book will take its place among the classics in this subject.

A CONSTELLATION OF THE NORTH-EAST.

IN *Viri Illustres Universitatum Abredonensium*,[6] W. E. MCCULLOCH, himself a medical alumnus of the ancient seat of learning, has compiled a little volume that every Aberdeen graduate and student should have in his possession, if for nothing else than to remind him—if so be he needs the reminder—that he is one of a goodly company. Dedicated "To my Fellow-Students," the volume opens with a modest preface in which our compiler, after due acknowledgements to the University librarian, Mr. P. J. Anderson, and Professor J. Arthur Thomson, states that, having considered biographical notices of about 700 of "our graduates, alumni, and teachers," he has only included some 280 of these in his final selection. For inclusion in the list he has applied the tests: "Did the subject lead? Did he set men thinking? Did he add to the sum of human knowledge or help to preserve it?" And Mr. McCulloch further states that he looks on his work as "merely a stop-gap until some graduate shall arise who will devote the requisite energy and ability to the full unfolding of these half-cut pages in our great records." But he may rest content, meanwhile; for he has well and truly laid the foundation stone of that granitic edifice which he hopes later to see rear its head.

The biographies are assembled under four headings—Science; Theology; Literature, Art, and Philosophy; and Public Services. Medicine, for some obscure reason, is slumped in along with Science—all the more strange as Theology is deemed worthy of a section to itself; but this may simply be an evidence of the hereditary, ingrained Scots respect for the pulpit. Amongst his medical men he deals with John Abercrombie (1780-1844), a native of Aberdeen and M.A. Marischal College, 1800, the famous teacher in the Edinburgh medical school; Francis Adams of Banchory-Ternan (1796-1861), M.A. King's College, 1813, the well known country practitioner and classical scholar, to whom "Rab" pays a glowing tribute under "Our Gideon Grays" in *Horae Subsecivae;* his son Andrew Leith Adams (1827-1882), M.A. 1846, M.B. 1848, F.R.S., who, after serving in the Army Medical Service, became Professor of Natural History at Queen's College, Cork; Sir Andrew Clark (1826-1893), M.D. 1854; Sir James Clark (1788-1870), an alumnus 1803, and M.A. (hon.) 1848, Physician in Ordinary to the Queen (Victoria), and to whose advice is ascribed her purchase of Balmoral; Sir Patrick Dun (1642-1713), alumnus Marischal College, 1658-1660, a native of Aberdeen who went to Dublin in the far-off days when the expectation of life in that city was longer than it is now, and became its leading physician and President of the Irish College of Physicians; James Matthews Duncan (1826-1890), M.D. 1845; the academic Gregories, of whom James *secundus* (1753-1821) and John (1724-1753) were Professors of Medicine in Edinburgh after being teachers of medicine in Aberdeen; Sir James Mackintosh (1765-1832), M.A. Marischal College, 1784, and M.D.Edin., 1787, who forsook medicine for law, was recorder of Bombay, and later a Liberal M.P.; Sir Patrick Manson (1845-1922); Sir James McGrigor (1771-1858), M.A. Marischal College, 1788, M.D.Edin., 1884, Director-General of the Army Medical Department, 1815-1851, whom Wellington called "one of the most industrious, able, and successful public servants" he had ever met; and William Pirrie (1817-1882), M.A. Marischal College, 1825, M.D.Edin. 1829, the immortal "Baron" of much legendary lore, who was first Professor of Surgery at Aberdeen.

This little book deserves to have a wide circulation, not only in "Aiberdeen an' twal mile roun'," but also amongst the many, born or educated there, who have migrated beyond the sacred radius.

VITAMINS.

THE large number of books dealing with vitamins and nutrition which have appeared recently may be divided roughly into two classes—reference works for research workers, and semi-popular works intended for those without special knowledge of the subject. *Vital Factors of Foods, Vitamins, and Nutrition*,[7] by Mr. ELLIS and Professor ANNIE MACLEOD, one of the biggest volumes on the subject that has yet appeared, seems to be an endeavour to combine the two classes. The authors refrain as a whole from expressing their own opinion on problems, but give short statements of the results obtained by various authorities. This method unfortunately makes the book rather difficult to read, for the general result is somewhat reminiscent of a card-index. This must reduce the value of the book to those without special knowledge of the subject, more particularly as authorities disagree on an unfortunately large number of matters regarding vitamins; the general reader is not assisted by learning that a certain number of authorities believe one thing and an equal number believe the opposite.

From the point of view of the research worker the book suffers from the drawback that it contains very little about the work done during the last two years. This is, of course, an inevitable disadvantage attending the writing of a large book on a rapidly changing subject. The larger the book the longer it takes to prepare, and the more certain it is to be partially out of date by the time it is published. In the present case this is a rather serious disadvantage, for the present output of vitamin literature is something like one article a day, and about one-third of the total literature on the subject has appeared since the beginning of 1921. The book contains an appendix of thirty-four pages summarizing the evidence as to the distribution of vitamins in foodstuffs; about three hundred references are given and only about twenty of these refer to papers published in 1921 and none to papers published in 1922.

Similarly, in the chapter devoted to rickets we found no

[6] *Viri Illustres Universitatum Abredonensium.* Compiled by W. E. McCulloch. Aberdeen: W. and W. Lindsay. 1923. (Demy 8vo, pp. xvi + 175. Cloth, 4s. 6d. net; paper, 3s. 6d. net.)

[7] *Vital Factors of Foods, Vitamins, and Nutrition.* By Carleton Ellis, S.B., F.C.S., and Annie L. Macleod, Ph.D. London: Chapman and Hall, Ltd. 1923. (Med. 8vo, pp. xiii + 391; 22 figures. 25s. net.)

mention of the very important recent work upon the influence of light on this disease, which has made it necessary to revise many of the conclusions previously arrived at concerning the relation between vitamin lack and the occurrence of rickets. It may be replied that as it is obviously impossible to write a completely up-to-date textbook upon such a subject as vitamins, it is therefore unnecessary to lay too much stress upon the points mentioned above, but we feel that the volume under review rather falls between two stools; it is too much a summary of conflicting opinions to be of great service to the general reader, and the fact that it contains so few recent references reduces its value as a book of reference for research workers. The writers of the book are chemists, and it is therefore not surprising that the best chapters are those upon the stability, chemical structure, and methods for the concentration of vitamins. In the chapter devoted to "Concentrated preparations of vitamins" several proprietary preparations of vitamins are mentioned; the authors might have been rather more cautious in accepting the claims made for some at any rate of the preparations mentioned.

The chapters devoted to the action of vitamins in disease contains a good summary of the knowledge available down to the middle of 1921. In the chapter "Vitamins for the Baby" an account of the vitamin requirements of infants is given, but we are surprised to read the statement (p. 295): "In spite of the somewhat conflicting evidence it seems justifiable to conclude that a healthy child can develop normally on an exclusive diet of cow's milk, whether raw, pasteurized, dried, or condensed, provided a sufficient quantity can be fed." Presumably the word "exclusively" means without the addition of fruit juice, and while we are not prepared to assert that it is impossible for a healthy child to develop on an exclusive diet of condensed milk, yet we believe that the available evidence is practically unanimous in indicating that on such a diet scurvy or rickets will probably develop.

As we have indicated, there are numerous points in this book open to criticism, but it may in conclusion be said that the authors have succeeded in compiling an immense mass of material, and that those interested in research in vitamins will find in this volume a large amount of valuable information, particularly in the chapters dealing with the chemistry of the vitamins.

SURGICAL PATHOLOGY.

Grundriss und Atlas der allgemeinen Chirurgie,[8] by Professor Dr. GEORG MARWEDEL, dedicated to Professor Dr. V. Czerny, is a short textbook dealing with surgical pathology and bacteriology. It is well illustrated, containing about 30 coloured and 200 ordinary illustrations. We observe that many of these show advanced stages of disease, seldom seen clinically nowadays. Whether they have been copied from old textbooks is not stated, but if not they seem to suggest either that the early treatment of disease as a whole does not penetrate the remoter strata of the Bavarian populace as it does in this country, or that it is more conservative.

In the chapter on sepsis and antisepsis special emphasis is laid on the work and teaching of Lister. Under anaesthesia all the ordinary methods are discussed; cocaine is recommended for local anaesthesia, and tropacocaine for spinal anaesthesia. It is interesting to note that the gas and oxygen method is not mentioned. Wounds of all kinds are discussed in detail. The question of shock and haemorrhage is dismissed in a few pages. Saline infusion and blood transfusion are mentioned, but it is disappointing to find no account of the research work on this subject during the war. Fractures are treated with plaster and (according to the diagrams) by a complicated series of weights, pulleys, extensions, and counter-extensions.

The classification of tumours in many respects differs from ours. Among the fibromata are included the hard and soft varieties, the mollusca fibrosa of von Recklinghausen, keloids, and the various forms of elephantiasis. The illustration of "Kolossales Lipom des Nackens" rather suggests a Tyrolese mountaineer with a permanently adjusted rucksack. The malignant tumours are classified into the sarcomata and carcinomata; among the former are grouped the peritheliomata, endotheliomata, and melanomata. Three varieties are given—the round, spindle-celled, and the myeloid. This grouping of the myeloid sarcomata is interesting because no reference is made to the non-malignant variety, although treatment by local resection is advised. Sarcomata of bone are divided into periosteal and myelogenous varieties. Rodent ulcers are placed among the carcinomata.

It is a pity that political venom should make its way into textbooks. Two spiteful references are made to the "disgraceful hunger blockade." It is regarded as a cause of non-puerperal osteomalacia and rickets, these various bone lesions being grouped under the heading of "Hunger Osteopathies." The greater incidence, severity, and mortality of the various forms of tuberculosis during the war is ascribed to the same cause.

[8] *Grundriss und Atlas der allgemeinen Chirurgie.* Von Professor Dr. G. Marwedel. Zweite vermehte und verbesserte Auflage. Munich: J. F. Lehmann. 1923. (Cr. 8vo, pp. xii + 454; 201 figures, 32 plates.)

NOTES ON BOOKS.

THE appearance of the fifth edition of CROSSEN'S *Diseases of Women*[9] is a satisfactory indication of the continued popularity of this book. In the reviews of the early editions we have indicated the main points of the work and expressed our high appreciation of its worth. The author in the present edition has subjected the text to extensive revision and has endeavoured to bring up to date the discussion of the *x*-ray and radium treatment of malignant disease, fibroids, and other pelvic conditions. There is also an interesting exposition of the employment of *x* rays in diagnosis by means of pneumoperitoneum, a method which is in vogue on the other side of the Atlantic for the moment, but which will probably disappear for all cases except some of sterility in which the patency of the tubes is dubious. Recent advances in pathology have also been incorporated in the text, as, for example, those with regard to the connexion between "endometrial" cysts of the ovary and adeno-myomata or "endometriomata" of the recto-vaginal septum and elsewhere. Dr. Crossen's book is very beautifully produced and profusely illustrated, and we are confident that this edition will be as successful as its forerunners.

The forty-second volume of the *Transactions of the Ophthalmological Society of the United Kingdom*[10] comprises the proceedings of that society during its forty-second session, together with reports of the proceedings of the Oxford Ophthalmological Congress, the Midland Ophthalmological Society, the North of England Ophthalmological Society, the Irish Ophthalmological Society, and the Ophthalmological Society of Egypt. At the session of the Ophthalmological Society of the United Kingdom in May, 1922, the chief discussion was on industrial diseases of the eye, to which Dr. T. M. Legge, Mr. A. Bernard Cridland, Professor Edgar Collis, Mr. N. Bishop Harman, and the late Mr. Charles Killick contributed papers. The feature of the Oxford Ophthalmological Congress in July, 1922, was the discussion on the significance of retinal haemorrhages, opened by Dr. C. O. Hawthorne and Mr. P. H. Adams; the important paper contributed by Dr. Hawthorne was afterwards published in full in our columns (JOURNAL, September 16th, 1922, p. 495). The Doyne Memorial Lecture at the Oxford Congress was delivered by Dr. J. Burdon-Cooper, on the etiology of cataract. An interesting discussion also took place there on methods of operating for cataract, to which Sir Anderson Critchett, Colonel Smith, Dr. K. K. K. Lundsgaard, and Mr. T. Harrison Butler contributed. The volume contains also reports of ophthalmological cases and pathological observations contributed to the various affiliated societies. There are many excellent illustrations.

Flowers and Fancies[11] is the title of a pleasant little book of poems by Mrs. CELESTINE LAVENS WEST, who shows a decided leaning towards the less elaborate forms of versification. The poems are marked by sincerity and sympathy, and their subjects cover a wide range—the countryside of Staffordshire and Northumbria, the fancies of children, Michael Collins, Einstein's theory of relativity, the seasons, and metempsychosis.

[9] *Diseases of Women.* By H. S. Crossen, M.D., F.A.C.S. Fifth edition, revised and enlarged. London: H. Kimpton. 1923. (Sup. royal 8vo, pp. xxx + 1005; 934 figures, 1 plate. 50s. net.)

[10] *Transactions of the Ophthalmological Society of the United Kingdom.* Vol. XLII. London: J. and A. Churchill. 1922. (Demy 8vo, pp. xlix + 409; illustrated. 30s. net.)

[11] *Flowers and Fancies.* By C. L. West. London: A. H. Stockwell. 1923. (Cr. 8vo, pp. 42. 3s. 6d. net.)

THE VOLUNTARY HOSPITAL SYSTEM.*

BY

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I HAVE chosen the subject of the Voluntary Hospital System because the maintenance of our hospitals is one of the most pressing social questions of the hour, and one which vitally concerns, not only the medical profession but the whole body of the community. No one who concerns himself at all with social matters can fail to be interested in the future of the hospitals.

The title "*Voluntary* Hospitals" has come gradually into use without any very exact definition of its meaning having been laid down. It has come to be applied generally to those hospitals which are supported by voluntary contributions as opposed to those on the one hand in which the patients pay for the treatment they receive, and those, on the other, which are supported by State or local government funds. It does not necessarily mean that all the work done in them is unpaid work, or that there are no patients in them who do not contribute to their maintenance.

The origin of these hospitals is largely lost in the mist of history, but with few exceptions they sprang up through the country during the latter end of the eighteenth or beginning of the nineteenth centuries by the benevolence of charitably disposed persons to provide that medical care and treatment which the necessitous poor could not provide for themselves in their own homes. With them came to be associated, in the larger centres, the medical schools in which medical students, no longer content with the training they could get by apprenticeship to older practitioners, could obtain organized instruction and practical experience under trained teachers of high repute. It became the recognized custom for a medical student during part of his curriculum to "walk," as it was called, one of the larger hospitals. Gradually as the State assumed control of medical education certain of these hospitals became the sole recognized places for the provision of the more professional parts of a student's training.

The control of the hospitals was vested in a body of governors, who were subscribers of a certain sum annually or donors of a lump sum, who themselves appointed a committee of their number to carry on the management. In those hospitals where any of the subscriptions come from the working class it has become usual to have representative governors for these subscribers and a definite representation of them on the board of management.

In the by-laws of most of these institutions there was originally a clause to the effect that only the necessitous poor were eligible for treatment. In our own Derbyshire Royal Infirmary, by a recent revision of the rules, it has been thought well to omit this clause. Since the foundation of the hospitals times have changed.

The advances of medical science have introduced many complicated and expensive forms of treatment, which can only be carried out in an institution fitted with costly apparatus, controlled by specially trained doctors, nurses, and assistants. Moreover, specialism in medicine has advanced to such a degree that a large number of diseases can now only be satisfactorily dealt with by the co-operation of several men who have made a special study of different branches of the work. Thus a surgeon, before undertaking a grave operation, often requires the assistance of a physician to elucidate certain medical aspects of the case, a radiologist to make certain *x*-ray examinations, and a pathologist to carry out special tests as to the working of the organs to be dealt with. This co-operation of medical men, or "team work," as it has come to be called, is of course available in a fully equipped general hospital, but elsewhere can only be obtained by running about to a number of specialists, an expensive business, only within the reach of those who are well off.

Further, surgical technique has become so complicated that a surgeon is very unwilling to perform serious operations except under the best possible hygienic surroundings and in rooms specially designed for the purpose, and with the help of assistants who are accustomed to his particular methods. This means that most operations are now performed either in the hospitals or in nursing homes, which from administrative expenses are within the reach only of the comparatively well-to-do.

It has become necessary, therefore, for the large bulk of the community and not only the necessitous poor to find a refuge for the relief of their graver ailments in the voluntary hospitals. At the same time changes have been taking place in the social outlook which affect the hospital question in various ways. It has gradually been recognized that the State has large responsibilities to its citizens. First, in the matter of education, then in sanitation and preventive medicine, and finally in the provision of medical care and support for the workers in ordinary sickness, the State has felt it to be its duty to take control and ensure that adequate provision is made for the needs of the community. The State has already made itself responsible to some extent for the treatment of infectious cases, for tuberculosis, for venereal disease, for school children, expectant mothers, and infant babies. These departments of medicine have been taken over by the State one after the other until, for the mass of the community, comparatively little besides the medical, surgical, and special treatment provided by the voluntary hospitals remains outside the control of the State or local authorities.

Another concurrent change is the altered eye with which the mass of the people regard so-called charity. The industrial class no longer wish to be the objects of charity from another class, and yet are forced to take advantage of the institutions which were started and long maintained by that class. The result is that the voluntary hospitals are no longer maintained by the rich as a charity to the poor, and all members of the community are now taking their share in the work. But since the money is given as a free-will offering and without any definite right to benefits conferred on the subscribers, the voluntary and charitable nature of the system remains. Naturally and rightly, with their increased share in providing the funds, the industrial classes have obtained a greatly increased representation in the management of the hospitals.

That the voluntary hospitals have done their work well and that they have become more and more popular with the public that use them is, I think, incontestable. They have fulfilled their function with credit to themselves and with benefit to the community. It is no failure on their part that has brought about the present financial difficulties, under which a large proportion of the hospitals in the kingdom are now working with an annual deficit. They are only suffering with the rest of the world from the tightness of money and increased cost of living produced by the war. It is a crisis which is likely to break some of them or seriously curtail their capacity for usefulness unless active steps are taken to restore their financial stability.

The easiest way, though difficult enough under the present conditions of high taxation, would be to obtain the necessary funds from the revenues of the State or local authorities. In doing this we should only be following the trend of the times. It has already been done in education and in several departments of medicine.

Arguments for and against State Control.

My chief object in bringing this subject before you is to discuss whether such a method would be for the good of the community.

To begin I will refer to the possible advantages of such a remedy.

1. In taking over the responsibility of providing hospital treatment for all those who need it, the State would be compelled by public opinion to provide full accommodation in the hospitals for all who demand it. This cannot be said to exist at present, though by careful use of the beds we manage to carry on without any great hardship to the individual.

2. The hospitals themselves, relieved of the present burden of financial anxiety, would be able to devote themselves more whole-heartedly to their administrative work. The responsibility for finding the money would fall on the broad back of the Chancellor of the Exchequer. The hospitals would only be concerned in seeing how much they could get out of him.

3. It might be thought that under unified State control it would be possible to co-ordinate the various medical services into a homogeneous whole and do away with a certain amount of overlapping, rivalry, and waste. To the orderly mind of the professional administrator and to the political reformer this might seem somewhat of an advantage, though I shall hope to show later that it is not all gain.

* An address delivered to the Derby Rotary Club.

4. The financial burden would be distributed fairly throughout the whole community, and not rest on the shoulders of the generous, though the degree of fairness would no doubt be view differently by individuals just as it is now in other forms of taxation.

5. It would no doubt be said by some, though I cannot altogether agree, that under State control a higher standard of efficiency could be obtained by a system of inspection similar to that obtaining in education.

Now for the opposite side of the picture:

1. The practice of medicine is a combination of an art and a science. It is based on scientific knowledge, and in recent years science has perhaps become the predominant partner, but it is still largely an art. A large amount of medical treatment is based not on exact scientific lines in which the correct treatment follows the correct diagnosis as a matter of routine in the way that an omelette is produced by the proper mixture and treatment of certain ingredients. It is largely a personal factor. The best doctor is one who, with a good knowledge of the recognized scientific facts, by his individuality and intuition is able to apply his scientific knowledge so as best to suit his own capacity and the characteristics of the patient. It is not a rule-of-thumb business which can be controlled by acts and regulations, but a skilful handicraft working largely empirically with a just regard to the qualities of both doctor and patient. We might conceive of a time when all medicine would be reduced to a dead level of science, but that time has certainly not arrived yet. The human body, its constituents and its vital processes, are in many ways too complicated for our present knowledge. We still must work largely in the dark. This is what I mean by the art as opposed to the science of medicine. Now art is a shy bird. It lives on freedom. It cannot endure being fettered by rule and harassed by control. It soon begins to wilt in captivity. Whenever arts have been bound by rule they have deteriorated. Whether it be in painting, poetry, music, or architecture, all progress stops when individual freedom is checked; and so it is with medicine. State medicine will never be progressive medicine. It is individualism and freedom that have brought about progress. With State control in medicine, as in every other department that the State has touched, a system of bureaucratic control, both financial and professional, will inevitably be introduced. People will not work honestly for the State unless they are watched. The State does not expect it. With inspection freedom and individual enterprise will to a large extent disappear and progress in medicine will cease, just as it disappeared years ago under the control of the Church. I know this is an argument against all State control in medicine, and you may say I am preaching a retrograde movement, but it is not wholly so. Most of those branches of medicine which the State has hitherto taken over are those in which control is least harmful and in which there are special reasons, such as the public safety, why they should be controlled; but it would be particularly harmful in those institutions which have led the way in the new developments of the science and art of medicine as the voluntary hospitals have done.

2. State medicine is extravagant medicine. Even an M.P. does not work for the State for nothing, and very few State workers will do more than they are obliged for their money—they get no thanks if they do. Not only must every worker be paid, but an army of paid administrators, inspectors, and financial controllers must at once be superimposed on the workers to see that they do their work and do not spend too much money. How does this compare with the present management of the voluntary hospitals? No one will, I think, deny that at present they are run very economically, and yet there is no stint either in the domestic or medical department. At the Derbyshire Royal Infirmary the staff have never, in my time of over twenty years, been refused any means of treatment or apparatus which they have asked for; but the staff, because they have had the financial interests of the institution at heart, have been careful and reasonable in their requests. From my experience of State military hospitals I am afraid that under State control the medical staff is not likely to be much interested in the economical working of the institution. Then, in the voluntary hospitals, the vast proportion of the medical work has been done for nothing. Under the State this certainly would not be so. Medical men could not be expected to do State work for nothing. Through their Medical Association they have already stated that they will not do so. The payment of the medical staffs must involve a great increase to the expense of running the hospitals under State control.

3. A cut-and-dried scheme of State hospital medical benefit designed to prevent overlapping, by which patients would be obliged to go into the institution provided for them in the area in which they live, would do away with that wholesome spirit of competition which does so much to stimulate the flagging energy and interest. You will remember that one of the chief points which was fought for at the time of the inception of the Insurance Act was free choice of doctor, and there is no doubt that this is a most important factor in keeping the medical man up to the mark professionally. If it is true of the individual medical man, it is equally true of the medical institution and its staff. If the limit of area of the Derbyshire Royal Infirmary was absolutely fixed and there was no competition between Derby, Nottingham, Burton, Sheffield, and Manchester, or even between the various hospitals in Derby itself, an important item which works for efficiency would be lost. It is perhaps an admission of human frailty that this is so, but it remains a fact that without competition human effort flags and the quality of work deteriorates.

4. There is what I call the Argument of Sentiment. This is a prosaic world and we are supposed to be a prosaic people, but sentiment still occupies a large part of our lives, and especially so in matters of health and sickness. The craving for sympathy is inherent in the human race, and is never more present than in times of illness. There is no doubt about its efficacy in mitigating the pain and misery that sickness causes, nor about the help that human sympathy gives in the actual cure of physical and mental disorders. Anyone who has seen the craving of a wounded man in a far-off land to get back to England and his friends, and the glow of hopefulness that lights up his whole being when he knows that he has been marked for transfer to the United Kingdom, could not fail to be convinced of the real curative power that sentiment has with the sick. There is no doubt that the voluntary system in our hospitals fosters this spirit of sympathy in the community. Those who give voluntarily, whether it be of their wealth or of their time and thought, cannot fail to have their sympathies drawn towards those for whose benefit they are giving, and an atmosphere will be produced in which there will be a blessing both for him that gives and for him that takes. Into this atmosphere, with its spirit of kindliness and charity, the sick will enter trustfully and without dread, and from it they come forth filled with a spirit of gratitude. I am not saying that in State institutions kindness and sympathy are not to be found, but I am convinced that it cannot be the same thing in them with human nature as it is. With the voluntary system there comes, too, the pride of possession to those who support the hospital. The voluntary donor feels a personal interest in it and likes to see it popular and efficient. He rejoices to see his hospital a credit to his town and county. This feeling reacts on the staff and is distinctly stimulating. One cannot help comparing the pride and affection with which our voluntary hospitals are regarded by a large section of the community with the atmosphere of business-like apathy which surrounds hospitals supported by taxation as they are in foreign countries.

Can the Voluntary System Survive?

These are, to my mind, unanswerable arguments in favour of a voluntary basis of maintenance for our hospitals, but of course they count for nothing if the goodwill and generosity of the community is insufficient to provide and maintain sufficient accommodation to meet the needs of those who require treatment. If the necessary funds are not forthcoming from voluntary sources they must be found by taxation. The work cannot stand still; hospital treatment has come to be a vital part of the life of the nation, and must be carried on in its interests. But it will be a bad day if the fountain spring of charity ceases to flow in sufficient volume to maintain and distribute its full measure of the healing fluid. If force has to be added to maintain the pressure, like all forced pressure it will be wasteful, extravagant, and harsh in its action.

The question is, therefore, whether it will be possible in the future to maintain these great and growing services on a voluntary basis. Have we reached the limit of what can be got by the free-will offerings of the people, or must the residue be extracted forcibly by legislation? In my opinion the answer to this question must be met by another question. Do the people of this country really want the voluntary system to continue? Do they realize the advantages of it from the point of view of what they get by it and what they have to pay, and that under the State they will have to pay more for an inferior article?

If they fully realize this and set about an effort to maintain the present system it can be done. In some places, in spite of bad trade and high cost of living, it is being done now, and these places are just such manufacturing centres as our own, with a large working-class population who believe in their hospital and have made up their minds that it shall go on.

At the end of 1921 the Derbyshire Royal Infirmary had a deficit of £7,000 on the year's working expenses, besides a considerable amount due on the extensive building scheme just completed. At

the end of last year not only was there no deficit on the year's working, but practically the whole of the previous year's deficit had been wiped out, and only a comparatively small sum was still due on the building fund. And how had this been done? Trade was bad; taxes were as high as ever. It was the working men's contribution. They decided that the voluntary hospitals were necessary to them and they found the extra money. It was found with enthusiasm. With the increasing subscriptions the interest in the institution has spread widely.

It is evident that here, at any rate, the voluntary system is popular with the industrial classes. But though the maintenance of the hospitals on a voluntary system is now assured in most large industrial areas, it is not so everywhere, and a system of this kind must stand or fall by its weakest members. It may be worth while to consider the views of some of the various groups in the State concerned with the question of the voluntary hospitals.

The Cave Committee's Report.

The Minister of Health appointed a committee in January, 1921, under the chairmanship of Lord Cave, to consider the financial position of the voluntary hospitals, and to make recommendations as to any action which should be taken to assist them. They reported in May of that year that in the hospitals of London there was a deficiency of £468,413, and in those of the rest of England and Wales of over £280,000; that since 1913 the income of these hospitals had risen by 67 per cent., but that their expenditure (chiefly due to increased cost of provisions, medical requisites, and wages) had increased by 138 per cent. They recommended that to set the hospitals on their legs the Treasury should, as a temporary measure, make a grant of £1,000,000. They stated that they were convinced that the voluntary system is worth saving, and that if it is worth saving any proposal for continuous rate or State aid should be rejected.

They also recommended the setting up of a Central Hospitals Commission under the Ministry of Health with local area committees under it to co-ordinate the work of the hospitals and to distribute any big central funds that might be forthcoming. They suggested various ways in which further funds might be made available, such as voluntary contributory schemes by workmen and employers, and various ways in which economies might be effected.

On the report of this committee the then Minister, Dr. Addison, expressed his agreement as to the importance of maintaining the voluntary system and set up the suggested Hospital Commission and its local committees, but with regard to the grant the Cave Committee had recommended, the Government followed the example of the unjust steward of the parable even to the exact proportion and sat down quickly and voted £500,000 instead of £1,000,000, making it a condition of grant to any hospital that an equal amount of new subscriptions should be found from other sources.

The Labour Party's Hospital Policy.

The Labour party, through their Advisory Committee on Public Health, have issued a programme of their policy with regard to the hospitals. Their proposals envisage a complete public medical service which shall include hospital treatment. They say, "No public medical service can be efficient that does not provide an adequate number of beds for those requiring institutional treatment, that the accommodation should be very ample." They estimate the present accommodation at 521,194 beds, and in their opinion think there should be 107,906 more. We all know that the present number of beds is insufficient, but such an increase would, in my opinion, be extravagant.

One of their points is that the hospitals are understaffed and that this is the cause of the overcrowding of out-patient departments and the long waiting lists for in-patients, and that the understaffing is due to the monopoly value of the appointments. There is, I think, an element of truth in this contention, but it is more or less inevitable with an unpaid staff.

They say that the one and only salvation for the hospitals of the country is State control and management, but almost in the same breath they testify to the magnificent work which has been done hitherto in the voluntary hospitals, and (as if not having the courage of their opinions of the necessity for State control) they recommend that the voluntary hospitals should be given the option of being taken over by health authorities or receiving grants from public funds conditional on efficiency and representation of the local authorities on the boards, but leaving to the boards complete control.

There is evidently a doubt in the minds of the promulgators of these proposals whether the bulk of the working population would not resent having their voluntary hospitals, which have grown into their affection, and which are in a very real way under their control at present, taken from them and handed over to an unsympathetic bureaucracy. Perhaps, too, they are not really convinced that State control is the best system.

I hope this question of hospitals will never become a matter of politics. In the general tendency for nationalization of the big public services, I sincerely hope this vital service will be kept outside. It is not a question of popular control. In the hospitals to a large extent we have this already. The beneficiaries are already largely represented on the boards, and will be to a greater extent as the working class come to furnish a larger proportion of the cost. Under the State, the real controllers will be the Chancellor of the Exchequer and the officials of the Ministry of Health, who have little knowledge of local circumstances and scant sympathy with local requirements.

The Medical Profession and the Voluntary System.

Now as to the opinion of the medical profession, two large representative meetings of the members of the staffs of the hospitals from all over the country were practically unanimously in favour of the voluntary system, and the voice of the general body of the medical profession as represented by the British Medical Association is equally unanimous. This cannot be for any motive of financial gain, for if the hospitals were handed over to the State the members of the staffs would certainly have to be paid. It is because they know that it would be bad for the hospitals, and because they as individuals would lose their freedom of action and thought without which their whole work would be cramped and stultified.

Before concluding I feel that I must say a few words about the relations of the medical profession to the voluntary system. For long years practically the whole of the responsible medical work at the voluntary hospitals has been a free gift by the medical profession to the public, and the demands on the time of the members of the honorary staff have been steadily growing. It may surprise some of you to know that the average number of hours a surgeon on the staff of the Derbyshire Royal Infirmary has to devote to his work there is just about twenty hours a week, apart from any work that he may put in on committees of management. In the twenty years I have been on the staff the surgical work has practically doubled, and it is now work which can, in my opinion, only be undertaken by one who devotes himself specially to surgery. This demand makes a very big hole in one's working week and leaves no very big proportion in which to earn one's living. There are, of course, compensations. In the early stages it gives one the opportunity to learn special work by practical experience, and as one goes on to keep one's hand in. It also gives some advantage in the way of professional prestige and what was referred to in the Labour party programme as monopoly value. But it is a fairly big price to pay for these assets, involving a great amount of physical and mental stress which I doubt if many of us would be willing to give were it not that the work is intensely interesting and performed in the happiest of surroundings, free from petty controls and in an atmosphere of kindly feeling and good fellowship.

The reason why the medical profession is wedded to the voluntary system—although it would probably be better off financially under a State system—is because it knows that under the latter it would be subjected to all the irksome pettiness of bureaucratic officials who, to justify their existence, would be obliged to interfere whether they liked it or no, without benefiting the patient one single jot.

Under the voluntary hospital system as now administered there is not unnaturally a certain amount of feeling among some members of the staff that to some extent their services are being exploited—that a considerable section of the community are getting our services free who are able, and even quite willing, to pay something for those services. There is a dread, too, that with the increasing proportion of the community who get their treatment free the number left may not be sufficient to provide a living for the increasing number of doctors required to do the increased free work. These factors naturally keep consulting fees high and produce a system by which the well-to-do are taxed to pay for those who are not so well off. At a time when the hospitals are struggling for existence it is hard to devise a scheme by which the burden can be more evenly distributed.

The medical staffs have, however, been obliged to lay down that they shall receive a proportion of any funds received by

the hospitals for the treatment undertaken by the hospitals on behalf of public authorities, such as the Ministry of Pensions, the Ministry of Health, and the local health authorities. Further, it has been found necessary to give remuneration for some of the less well paid specialties, such as anaesthetics and *x*-ray work, in order to obtain the services of suitable men. In the future it may be necessary to extend this principle to some of the junior physicians and surgeons if the right class of men are to be obtained. But this will not, in my opinion, alter the voluntary nature of the bulk of the service which we have so much at heart.

I have not gone in any detail into the ways in which sufficient funds may be got to keep the voluntary system alive. I have contented myself with giving an exposition of the faith that is in me with the hope that it may stimulate public interest in the voluntary system and put off the day when these great institutions are handed over to bureaucratic control.

PARENTS' PAYMENTS FOR MEDICAL TREATMENT OF SCHOOL CHILDREN.

THE Board of Education has issued to local education authorities a circular (1300 of March 16th, 1923) explaining its requirements in respect of parents' payments for treatment received by their children through the School Medical Service. The imposition of these charges is obligatory under the Education Acts, and "it is not open to a local education authority, in exercising their statutory powers, to adopt arrangements, or to the Board to approve arrangements, which make no provision for obtaining payment or for discriminating between cases in which parents are able or unable to make payment."

The provision contemplated by the Board as meeting the "reasonable requirements of the Act" includes the adoption of an income limit, below which treatment shall be rendered free, and of a scale of charges for the several forms of treatment provided by the authority—both the income limit and the scale to be adjusted in accordance with local conditions. As an example of the arrangements considered satisfactory a scheme is quoted providing for free treatment in the case of a family of two parents and three children where the total weekly income, after deduction of rent, does not exceed 50s. When this income is exceeded, minor ailments may be treated free for the first fortnight, and subsequently at a charge of 1s. for three or 2s. for six months' treatment. Operative treatment of tonsils and adenoids may be offered at 5s. to 7s. 6d., spectacles charged at cost price, and dental treatment at 6d. an attendance or 1s. for the full treatment. Where wide variety of income exists it is suggested that some corresponding variation should be made in the charges, and it is expressly provided that the income scale adopted in respect of medical treatment should be less severe than that for the provision of free meals, and that investigation into the circumstances of parents should be confined to doubtful cases and as simple as possible. Finally, the Board is prepared to accept, at least for the present, schemes which provide free treatment for minor ailments, subject to the provision of satisfactory arrangements for payment for other types of treatment. In areas where no charge has hitherto been made, and it "is not easy to bring a complete scheme into force at a moment's notice," the Board will accept for the current year any scheme which marks a "reasonable advance" upon previous practice. The circular does not touch upon the vexed question of the definition of minor ailments.

The position indicated by this circular is of considerable interest. The statutory obligation to impose some charge upon all parents able to make any payment dates from 1909, whereas the obligation to provide such treatment, as opposed to the permission to do so, dates only from August 1st, 1919. Apparently what is termed in the circular "the clear intention of Parliament" in connexion with these payments has been to a great extent ignored, both by local and central authorities, over a period of some fourteen years. This being so, we may well inquire what the intention of Parliament really was, why it has been ignored, how far the present policy is calculated to give it effect, and what will be the probable result of its enforcement.

It is perhaps fair to assume that in providing for payments by parents Parliament had in view one or all of three objects—to restrict treatment to the necessitous, to relieve the pressure on the public purse, and to provide for the case of parents who, unable to meet the full cost of treatment, may wish to contribute towards it according to their capacity. The explanation of the present activity lies, presumably, in the prevailing policy of retrenchment, and in the extension of facilities for treatment to children in secondary schools, many of whom are in more favourable economic circumstances. The experience of a local authority which has endeavoured during the last twelve months to give effect to the policy now laid down by the Board will serve to illustrate both the cause of past neglect of the obligation and the success likely to attend the attempt to make it effective. According to the report of the school medical officer for 1922, the authority, in adopting a scale of charges,

> "had in mind two dangers attaching to a rigorous requirement of payment for treatment given: firstly, that such action would serve as a deterrent to obtaining treatment for an ailment in its early stages, and hence would tend to rob the School Medical Service of its main function—the prevention of disease by its early detection and treatment; and secondly, the fact that the sums recovered might not pay for the cost of collection."

The authority calculated that, assuming all parents to be capable of payment on the prescribed scale (a condition which does not, in fact, obtain), the maximum amount recoverable for the year would be about £250, whilst the expense involved in any system of inquiry as to income in individual cases would amount to about £80. Accordingly the adoption of an income scale was rejected in favour of an arrangement by which head teachers inform the school medical officer of all cases in which, in their opinion, the scale payments cannot be met. In all other cases parents receive a request for the amount due under the scale in respect of every child treated. Under this scheme the total amount received by the authority during nine months was £18 4s.

If this experience is typical (and the absence from the reports of school medical officers and those of the Board of Education and its chief medical officer of any indication of the total sum recovered each year in respect of treatment in areas where scales are actually in force is significant in this connexion) it would seem that the present policy is not calculated to meet the first end in view—namely, relief of the rates, with a corresponding decrease in the amount of the Treasury grant. On the other hand, the nature of the charges suggested demonstrates that there is no intention of using them as a means of inducing parents able to obtain necessary treatment privately to do so rather than utilize a service primarily intended for the necessitous. As regards those who may wish to pay according to their means, the object in view might perhaps be more simply attained by a system of voluntary contributions. Moreover, there is a distinct danger that parents actually making the scale payments may imagine that they are paying for the service rendered. It is to guard against this danger that some authorities have adopted an expedient referred to in the Board's circular—namely, the exhibition of a table showing the actual cost to the authority of each service rendered, with a box in which parents may place some contribution towards the difference between that cost and the scale charge. The plan seems rather clumsy, but, provided that in reckoning the cost of each service adequate allowance is made for establishment and administrative charges, it may be of some use.

In view of the difficulty of the whole position it may be asked whether the intention of Parliament in connexion with these payments is, after all, so clear as the Board suggests, and whether the present policy is indeed calculated to give it effect. If the answer to these questions is proved by the experience of the next twelve months to be in the negative, it may be hoped that some amendment of the law will relieve the Board of the thankless task of trying to enforce a policy which would seem not to work well in practice.

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IONIC MEDICATION AND THE CONSTANT CURRENT.

THE important place which galvano-therapy holds in modern therapeutics was indicated by the correspondence which followed the appearance in this JOURNAL of a paper by Dr. David Campbell[1] upon ionic medication. His main conclusion was that the amount of any drug introduced in an ionic state into the body by currents which can be used therapeutically is very small. He found that a drug, as soon as it is carried through the skin, is swept away in the blood stream, and produces its specific effect upon the system generally, and that there is therefore no local concentration. Nor is there any evidence of deep penetration; experimental evidence in animals is all against the belief that a drug penetrates farther than the subcutaneous tissue, and it seems quite clear that a similar state of affairs exists in man.

These conclusions, which Dr. Campbell based upon his own experiments and the results of several other workers, have been challenged by some correspondents; but a study of the literature reveals a really overwhelming mass of evidence in their support.

A belief has prevailed that it is possible by means of an electric current to drive drugs down directly into the muscles and joint cavities. The facts known regarding the rate of migration of ions in an electric current render it almost incredible that this can occur under therapeutic conditions, but in addition very careful tests made upon animals by Inchley,[2] and other results quoted by Turrell,[3] show that the ions do not penetrate directly beyond the subcutaneous tissues. How, then, are we to account for the fact that the many practitioners who resort to ionic medication have become convinced of its efficacy?

In the first place we have a very general consensus of opinion that the constant current is of great value in many conditions, and particularly in the relief of pain in such diseases as sciatica, neuritis, and fibrositis. The exact mode of action is unknown, but various possibilities may be mentioned. Dr. Campbell suggests that the action is simply by way of counter-irritation, and the therapeutic application of the constant current does produce irritation beneath the electrodes. This effect can be accounted for partly by the heat produced; the current is most concentrated beneath the electrodes, and the skin has a far higher resistance than any other tissue traversed; hence there is a maximal production of heat beneath the electrodes. Electrolytic effects in the electrodes also are capable of producing irritation, and such action will be most marked when irritant drugs such as salicylates are present; this may account for the superior results stated to be obtained when the electrodes are soaked in salicylates instead of salt solution.

Dr. Turrell, in a recent letter,[4] has suggested that the benefit is due to the heat produced in the tissues by the passage of the constant current. The objections to this view are that the chief site of heat production must be the skin, and that many observers claim that in many cases the application of the constant current is followed by results superior to those produced by diathermy, although more heat is produced by the latter method. There can, however, be no doubt that heat production plays a very important part in producing the beneficial effects observed. Dr. A. R. Friel has suggested[5] that the important factor is electrical endosmosis, which causes a passage of fluid through the tissues towards the negative electrode. Such an effect can be produced in dead tissues, but it appears doubtful whether it can occur in tissues provided with an efficient circulation. Finally, it is often suggested that the current causes a stream of ions between the two electrodes, and that the cells are stimulated by the passage of these ions through them. The objection to this view is that the surface membranes of cells have a high resistance, so that in all probability nearly the whole of the current passes through the tissue fluids.

Our knowledge as to the action of the constant current is obviously very imperfect, and there is an unpleasant amount of truth in Dr. Turrell's[4] blunt comment: "When we consider that the constant current, the so-called 'ionic medication' or 'ionization,' is commonly ordered by medical men who have no knowledge of electricity or its mode of action, and that the treatment is generally carried out by those who have no knowledge of medicine or the nature of the disease they are treating, it is remarkable that benefit is so often obtained." That such a comment is possible seems to indicate that more regard ought to be paid to teaching electrotherapeutics in medical schools, for there is no doubt that the subject is becoming of increasing importance in practical therapeutics.

Moreover, many of the unsettled problems mentioned above should prove soluble by experiment, and it is to be regretted that more research is not carried out in this interesting and important branch of therapeutics. Dr. Campbell's paper was both interesting and valuable; it is a pity that such papers should have an additional value due to their rarity.

[1] David Campbell: BRITISH MEDICAL JOURNAL, 1923, i, 409.
[2] O. Inchley: *Journ. of Pharm. and Exp. Ther.*, 18, 241, 1921.
[3] W. J. Turrell: *The Principles of Electrotherapy.* Oxford Medical Publications, 1922, p. 11.
[4] W. J. Turrell: BRITISH MEDICAL JOURNAL, March 24th, 1923.

INHERITANCE OF ACQUIRED CHARACTERS.

FOR something like a generation the belief that acquired characters are not transmitted to the offspring, reinforced by Weismann's hypothesis of the "continuity of germ plasm," has held sway. Those who ventured to believe otherwise went in danger of condemnation as heretics. Floods of printers' ink were expended in expounding the true doctrine, but most of the writing was *a priori*. For nearly a quarter of a century Dr. Paul Kammerer, a member of the staff of the institute for experimental biology in Vienna, has been working at the subject by experiments of a most laborious character, which seem to have been very carefully made and very cautiously interpreted. Little, however, was heard about them in this country until last summer, when a member of the Cambridge Natural History Society visited Dr. Kammerer, and studied some of the breeding experiments in progress. The visitor was particularly impressed by certain observations on Alytes, and eventually the Society invited Dr. Kammerer to come to this country; the lecture he gave in Cambridge has now been published.[6]

[5] A. R. Friel: BRITISH MEDICAL JOURNAL, March 17th, 1923.
[6] *Nature*, May 12th, p. 637.

In frogs, which pass the mating period in water, there appears shortly before that time on the inner fingers of the males a dark, rough, horny pad; in Alytes, which mates on land, no such pad appears; but if they are induced to mate in the water—by raising the temperature so that if they went ashore they would be dried up—certain changes gradually appear; among these is a pad limited to the inner fingers in the first season, but extending in subsequent breeding seasons to the other fingers, to the ball of the thumb, and even to the under side of the arm. On examining the skin of the thumb of the normal male it was found to be subject to an annual thickening, and it is characteristic of Dr. Kammerer's caution that in view of this natural tendency to pad formation he does not look upon this observation as affording a trustworthy example of the inheritance of acquired character, even though the pad appeared in four successive generations after the original stimulus of warmth was removed.

Setting these observations aside we turn to others which their author thinks may be regarded as crucial. They were made on an Ascidian, *Ciona intestinalis*. It possesses great powers of surviving mutilation and of reproducing parts that have been amputated. It has two tubes or siphons, water being drawn in by one and expelled again by the other. If the two siphons (inhalent and exhalent tubes) be cut off they grow again, and become somewhat longer than they were previously. By repeated amputations individuals were induced to grow very long tubes in which the successive new parts produced a jointed appearance. The offspring of these individuals had siphons longer than usual, but the jointed appearance has been smoothed out. "That is to say, the particular character of the regeneration is not transferred to the progeny, but a locally increased intensity of growth is transferred." Kammerer was able to go further. Weismann's doctrine of the necessary continuity of germ plasm had previously been shown to be subject to exceptions, and a further experiment made by Kammerer is very significant in this connexion. At the hinder end of Ciona, in the coils of the intestine, lies the generative organ, a hermaphrodite gland. If the whole of this hinder part of the body be removed, the front part regenerates and reproduces a new generative organ, so that the new germ plasm has been formed from somatic tissue. The long-siphoned Ascidian with regenerated germ plasm gave birth to progeny which were long-siphoned. It has been objected to other experiments that the operation, or the change of environment as the case might be, in some way exercised a direct influence on the germ plasm; in this experiment this objection does not seem to apply. The new long-siphoned individuals are the offspring of an animal with a new generative organ formed after the original operation on the siphons, so that that operation can have exercised no influence on the germ plasm.

Another series of experiments, made on Salamandra, yielded some very striking results, though not apparently so conclusive as those with Ciona. It is indeed significant that the most convincing result should have been observed in an organism such as Ciona, which is low in the scale of living things and may therefore safely be assumed to be the more plastic. Man is so highly specialized, and the same is, indeed, true of all the mammalia, as to be very little plastic. None of the instances of inheritance of acquired characters in man, though very many have been reported at one time or another, can be said to fulfil rigid scientific requirements.

THE GROUP CLINIC.

LAST week the Westminster and Holborn Division of the British Medical Association held a meeting at the house in Brook Street, W., where a group clinic has recently been established. The occasion has afforded us an opportunity of giving (p. 876) an account of the interesting experiment in the organization of medical practice which is being made by a group of medical men, including consulting physicians and surgeons and specialists with the co-operation of a general practitioner, who is understood to have originated the idea. It is an attempt to introduce the group clinic system, which has existed in the United States of America for some years, with such modifications as conditions of practice in this country may render necessary. The scheme was outlined by Sir Thomas Horder in an address he gave to the Abernethian Society in January, 1922. Briefly it consists in housing under one roof a group of consultants and specialists, and the experts and equipment for pathological and radiographic investigation required in modern diagnosis. When the circumstances permit the scheme to be carried out to the full the patient is examined by such consultants as seem necessary in his individual case, special investigations are made if necessary, and an inclusive fee charged. It is hoped that in this way there will be a saving of time, money, and worry for the patient without any detrimental effect on the income of the experts forming the group. Sir Thomas Horder has answered in advance several of the objections raised against the proposal, but it is possible that in the process of developing the clinic other difficulties will arise. For example, it is proposed to retain a member of the group, "by preference a general practitioner of considerable experience," to indicate the member or members of the group to whom a new patient may best be allocated; it seems a little doubtful whether this plan will work well and really save time. If it is intended that the clinic shall assist the general practitioner in his work, it may be asked whether the best plan would not be to encourage the general practitioner habitually to do what is already permissible—namely, to select the member of the group who shall take initial charge of the patient. If this were done in every case it becomes a question whether the method of "clerking" for the various experts, which seems to be suggested, will prove necessary. Only experience will show; but it seems possible that the expert will find that the reading of notes combined with the questioning of the patient may take almost as much time as if he had himself questioned the patient in the usual way. There can be little doubt that the patient will as a rule be saved time and worry, and probably also money. This seems almost to imply that each expert in a case will receive less than his usual fee for each patient. On the other hand, the member of the group will be saved some worry, perhaps some time, and probably also some overhead expenditure which when working alone he is bound to incur. It seems possible that difficulty may sometimes arise in connexion with treatment, especially of a surgical nature. It is true that the clinic is supposed to be purely diagnostic in character, and that any member of the group is entitled to seek outside opinion. Nevertheless, if one expert in the group should systematically prefer to seek opinion in some special subject outside the group, will he not run the risk of destroying the mutual confidence of the members? Even if he wishes to maintain solidarity, he may meet with difficulties raised by the patient or the practitioner. We ask these questions with no idea of opposition to the principle of the scheme; they may all be solved satisfactorily, and certainly the courage of the promoters of the clinic is worthy of admiration and deserving of success. The only criticism we have heard from a patient is that the congregation of large numbers in the common waiting-room may lead to embarrassment by the accidental meeting of friends.

AN EPIDEMIOLOGICAL VIEW OF ULTRAVISIBLE VIRUSES.

AT a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on May 11th, the President, Dr. R. J. Reece, C.B., M.D., in the chair, Sir William Hamer, M.D., read a paper on the ultravisible viruses considered from an epidemiological point of view. He traced the modern history of the subject from Buchner's demonstration in 1897 of an intracellular enzyme in the yeast cell, and observed that the germs of the bacteriologist might perhaps "assume importance in disease mainly by reason of their being able under certain conditions to live in symbiosis with the generally speaking much more deadly though far more minute ultravisible living particles." The important inter-relationships between the ultravisible germs and the bacteria had been compared "to those between man and the tools he works with; or alternatively to the partnership, on a far vaster though probably less important scale, between alga and fungus connoted by the term lichen." Two questions had to be considered: (1) Were germs "hitherto regarded as causal really primarily concerned with fermentations and with diseases, or merely concomitants—that is, associated organisms"? (2) What was the "status, *qua* organization, of the ultramicroscopic 'enzymes'"? In dealing with the first question, Sir William Hamer referred to Lord Lister's classical researches on the souring of milk, and quoted the remark that "it is far from impossible that there may exist ultramicroscopic organisms, as real, as distinct, in structure, and as potent in their effects as is the *Bacterium lactis*." In these words Lord Lister remarkably anticipated the results of later research, and "saw as in a glass darkly the phenomena now familiarly described as those of 'sporting' or 'mutation' in bacteria, and clearly discerned that ultravisible particles might play a part in these." With regard to the second question, the opinion was expressed that the experimental results suggest that each germ must be assigned a very complex constitution *qua* enzymes; one enzyme might be represented by numerous particles in a condition of great activity and apt for rapid multiplication; another might be poorly represented by particles in an inactive or dormant condition. After outlining the present state of opinion respecting the physico-chemical status of catalysts and enzymes, Sir William Hamer remarked that "it would simplify things a great deal if, taking our courage in both hands, we boldly declared that many 'organic catalysts' are really living organisms." He referred with approval to the late Professor Minchin's speculations regarding the simplest forms of life and their origin, and added that "an outstanding difficulty of the epidemiologist, confronted with all the later developments of the germ theory, is, however, that of explaining persistency of type in epidemic disease—persistency such as that displayed, say, by measles or small-pox . . . In the case of ultravisible germs of epidemic disease, it may be that, while variability of type is favoured by association of the primary ultravisible organism with various satellite secondary invaders, there is an inevitable return, at appropriate intervals, to phases of influence which again and again repeat themselves. Just as syngamy prevents a species from breaking up into strains, so some equilibration between a primary influence and secondary influences encountered in the bodies of the hosts may bring about major waves of epidemic disease." De Vries, he went on to point out, had hinted at something of this kind in his "periodic mutations" of the higher plants, and said that "analogous phenomena will at once suggest themselves to all those who have followed up Creighton's teaching with regard to influenza, scarlet fever, and diphtheria. Minchin's ultramicroscopic chromatin grains may then become endowed by mutation with the capacity for exercising marvellous powers; for while an evening primrose, when it mutates, causes comparatively speaking but little disturbance in the world at large, the ultravisible germ of influenza, on the other hand, when it manifests its greatest effects, the pawn becoming, so to speak, a queen, determines development of influenza in pandemic phase, 'posting' abroad and wreaking terrible havoc among the peoples of the globe."

LIFE AND PROBLEMS IN A MEDICAL UTOPIA.

THE conditions of life in a medical utopia were reviewed by Dr. J. Walter Carr in an entertaining address delivered to the Medical Society of London on May 14th. Those privileged to live under the despotism of some benevolent autocracy, such as a super-ministry of health, will, in the days of a medical utopia, lead a strictly hygienic existence under the watchful supervision of the State from infancy to old age. The young couple about to get married will be provided with certificates of fitness and receive instruction in sex hygiene; pregnancy will be notifiable to the medical officer of health, and the unborn child will be brought into the grip of the municipal authorities even before parturition, which, of course, will not be tolerated in the unhygienic surroundings of the home. Compulsory attendance of mother and child at the infant welfare centre will enable the State to regulate the life of the newborn child until he attains school age, when he will be transferred to the care of the school medical officer, who will in due course hand him on to the panel practitioner when the child ceases school attendance. Soon after birth the question will have to be faced as to which superfluous organs it will be necessary to remove for reasons of personal hygiene and the prevention of future disease. Boys will, of course, all be circumcised, but in all probability the appendix also will be removed as a matter of routine in all new arrivals in the medical utopia. The complete removal of the colon as soon as possible after birth would prevent the onset of intestinal stasis and the innumerable grave, distressing, and common diseases attributable to absorption of toxins from this organ. The colon is a veritable cesspool; its removal is essential to health, and in a medical utopia a race of surgeons would be evolved capable of performing the operation of colectomy with great dexterity and without danger to the patient. For the benefit of conscientious objectors (if such there be) paraffin would be distributed gratuitously by the medical officer of health. Tonsils and adenoids would be compulsorily excised in a well regulated State, and there is much to be said for the removal of teeth of the second dentition immediately or soon after their appearance, instead of removing them one by one after pyorrhoea and decay have inevitably supervened. In women the uterus and mammary glands will be excised after the climacteric in order to avoid malignant disease, and in man at the corresponding period of life the prostate will be removed, any deficiencies in internal secretion being made good by organotherapy. Vaccination against small-pox will be carried out every ten years and a well devised blend of half a dozen organisms will be used for compulsory inoculation against diseases of the respiratory tract, such inoculation being carried out every few months throughout life. Meanwhile, the mind will not be neglected, for the psycho-analysts and interpreters of dreams, who will be attached to all infant welfare centres, schools, and courts of justice will watch over the developing intelligence and by timely intervention nip in the bud those undesirable complexes which, if allowed to develop, would lead to such preventable mental afflictions as neurasthenia, psychasthenia, and melancholy dispositions. Guarded and controlled in this salutary fashion, man will ultimately pass into a condition of simple senile decay, but there will probably be special provision for old people, homes where they can pass their declining days in attractive surroundings equipped with a lethal chamber, under strict medical control,

by means of which the aged may pass out peacefully from the kindly supervision of the authorities of the medical utopia. Will the inhabitants of the medical utopia be better off than the citizens of to-day? Dr. Carr was forced to the conclusion that he would rather see England free than England thoroughly healthy. Despots always abuse their power, and however high-minded may be the conceptions a man desires for his follows they may none the less be completely erroneous. Health depends on obedience to laws, but these laws must be intelligently understood and should be voluntarily obeyed. Social conditions must be improved in the future, but the individual must also be educated to a social consciousness, and a happy blending of socialism and individualism offers a prospect of true evolution. Obedience to the moral law is the only way to a medical utopia.

THE LISTER INSTITUTE.

THE annual report for last year, presented by the governing body to the meeting of members of the Lister Institute on May 16th, is a record of a very large amount of valuable research work done under the inspiration of the director, Professor C. J. Martin, C.M.G., F.R.S., and also of much important routine work conducted in the department for the preparation and study of antitoxic serums at Elstree, and the department for the preparation and study of antivariolous vaccine at Hayle. In the department last mentioned a series of experiments, continuing those conducted in the previous year, has demonstrated that while minor differences in the immunization value of a stock lymph against different strains of African variola exist, a high degree of immunity is conveyed against all those experimentally tested. The experiments lend no support to the view put forward by some medical officers of the Colonial Service that the variola of native West Africans is not the same as the variola of Europe. In the department of bacteriology Dr. M. Cowan has continued her work on strains of streptococci. Mice immunized with the non-virulent (R) type are found to acquire a certain degree of immunity against the virulent (S) type. The results have an obvious bearing on serum therapy in streptococcal infections, and horses are being immunized at Elstree with both types, in order to ascertain whether the resultant serums differ in their protective action. When frequently subcultured both strains remain stable, but in freshly isolated growths left for long periods without subculture the non-virulent type tends to become dominant. Miss D. Steabben, a Jenner memorial research scholar of the Institute, had begun a research into the effect of various organic and inorganic colloids, in the hope of elucidating the physiological basis of so-called "shock" therapy and non-specific vaccine therapy, when her services were requisitioned for the National Collection of Type Cultures owing to the absence of the staff through illness, due to the newly discovered Californian disease, tularaemia. A culture of *B. tularense*, the causative organism, had been received from the Government Health Laboratories, Washington, in the spring of 1922, and passage through guinea-pigs and mice was readily effected. In July Miss Rhodes, the assistant curator, fell ill, and in September Dr. R. St. John Brooks, the curator, and also Dr. Schütze. It became necessary to elaborate a method of serological diagnosis; a suitable antigen was not then available, but from the organs of infected mice, which teem with *B. tularense*, suspensions of the organism were prepared by a special process, and by their aid a diagnosis was established. Dr. Schütze made a rapid recovery, but the infection in the other two members of the staff ran a tedious, chronic course. Both returned to light work in January, but Miss Rhodes contracted what appeared to be a genuine recrudescence of infection shortly after resuming work, and had to be invalided again. A great part of the time of the staff of the department of experimental pathology and assistants working in it was taken up by investigations into questions relating to nutrition and vitamins, with special relation to rickets. Many important and some unexpected results were obtained. To this part of the report we hope to recur at an early date. The governing body, in concluding its report, expresses its satisfaction at the high quality of the work carried out at the institute during the year and the importance of the results obtained, and places on record its appreciation of the devoted and enthusiastic labours of the director and of the scientific staff in the furtherance of the objects for which the Lister Institute was founded.

STERILIZATION OF MENTAL DEFECTIVES.

"Thou did'st prevent me; I had peopled else
This isle with Calibans."

DURING a large part of the second half of last year our correspondence columns bore witness to the interest taken by readers in the vexed question of what is to be done with the mentally unfit. The correspondence on sterilization was initiated by Lieut.-Colonel A. E. J. Lister on July 1st, and was continued by many other readers (among them Sir Archdall Reid and Sir Bryan Donkin) from many points of view—biological, sociological, and administrative. When the debate seemed to be at its height Sir Bryan Donkin laid down the proposition that without a clear understanding of certain key words—inheritance, reproduction, innate, acquired, germinal, somatic, and the like—no useful purpose could be served by discussing the question of sterilization of the feeble-minded. This plea for precision in the use of biological terms seemed to have some effect; at any rate, the correspondence thereupon died down. Interest in the subject has, however, been maintained, as is evidenced by the discussion at the annual meeting of the Westminster and Holborn Division (BRITISH MEDICAL JOURNAL, May 5th, pp. 754, 760). The subject was introduced by Dr. Gibbons, whose paper, which was published in full, has provoked some further correspondence, which, however, does not seem likely to add much to our information, beyond the fact that some of the laws passed by State legislatures in America are not enforced. By a coincidence we have received quite recently from New Zealand a communication on this matter by Dr. Clennell Fenwick, C.M.G., consulting surgeon to the Christchurch Hospital. He sends us extracts from the local newspaper showing the interest taken by certain hospital authorities in the problems of mental degeneracy. In New Zealand the hospitals are managed by hospital boards, elected by the ratepayers. Not the least active of these is the North Canterbury Hospital Board, which has lately shown its concern for the public welfare by referring to its hospital committee, whose chairman is Dr. Fenwick, the question of the sterilization of mental degenerates and epileptics. The committee passed a series of recommendations, and these were adopted by the board. Apart from the merits or defects of the recommendations, their formal adoption has this advantage, that it implies subsequent consideration of the whole question by the Government of New Zealand. In further proof of the attention now being devoted to this problem by the medical profession at home and abroad, we may note that the Section of Medical Sociology at the forthcoming Annual Meeting of the British Medical Association at Portsmouth has chosen the topic of mental deficiency in its various aspects as the principal dish in its bill of fare.

MEDICAL WOMEN'S FEDERATION.

THE annual meeting of the Medical Women's Federation this year was celebrated by a dinner held at the Trocadero Restaurant, London, on May 10th. Lady Barrett, C.B.E., M.D., presided, and over 200 members and friends were

present. The official guests included the Earl of Onslow, Captain Elliot, M.P., Sir George Berry, M.P., Sir William Hale-White, Sir Sydney Russell-Wells, M.P., Mrs. Swynnerton, A.R.A., Mr. H. J. Waring, Mrs. Wintringham, M.P., Dr. Alfred Cox, O.B.E., Medical Secretary of the British Medical Association, and Dr. James Neal, General Secretary of the Medical Defence Union. After the loyal toast had been honoured, Lady Barrett gave a brief account of the origin and progress of the Medical Women's Federation. She said that it was only six years since the scattered associations of medical women in Britain were united into one federated body, largely as the result of the efforts and enthusiasm of Dr. Jane Walker. The membership then was 355; now it was 800. The fellowship and helpfulness engendered proved a powerful stimulus. It seemed to be a case of rejuvenescence by conjugation. In the last year, although the subscription had been increased, the membership had increased by over 100. In the first quarter of this year 93 new members had been enrolled. Great interest was being shown by the newly qualified medical women, and in many places hospital students were becoming student associates. This movement, like so many other good things, had originated in the provinces, and on the initiative of the students themselves. Already over 400 students had become associates. The medical women of Britain were also seeking to join hands with the medical women of other countries. The constitution of the International Medical Women's Federation, which was drawn up last year at Geneva, had been approved by the medical women of eighteen countries. They hoped that this international association would do much in the promotion of international friendship and peace. At this, the first dinner of the Federation, they were naturally anxious to entertain as guests their men colleagues in the profession. Medical women were in no way antagonistic to medical men, but desired real co-operation. Sex antagonism within the profession was a bogy. Great contributions had been made to progress by medical men in the past, and they hoped that even greater contributions might be made in the future by men and women working together. The toast list included "The Medical Profession," proposed by the Earl of Onslow; "The Medical Women's Federation," proposed by Sir Sydney Russell-Wells, M.P.; and "The Guests," proposed by Dr. Jane Walker in a humorous and vigorous speech, in which she paid a graceful tribute to the friendly help medical women had always received from their men colleagues. The occasion was a great success in every way.

ATMOSPHERIC POLLUTION AND FOG PREVENTION.

THE question of the extent to which fog in London is caused by atmospheric pollution due to preventable causes was the subject of a report by the Public Control Committee to the London County Council on May 15th. The report describes fog in London as being caused chiefly by the smoke arising from domestic chimneys, industrial operations, railway and road locomotives, and steam vessels on the Thames and its subsidiary waters. On account of the extent of the drained area and the artificial warmth of the city there is reason to believe that if the smoke conditions of London and of the populous surrounding area, especially to the east, were mitigated, conditions favourable to the formation of fog would not arise so readily in London as elsewhere. During the last twenty years there has been a great development in the use of gas and electricity for heating purposes. The three gas companies which supply London had only about 600,000 appliances in use for cooking and heating twenty years ago; now they have more than two millions. The number of millions of units of electricity sold annually for all purposes in London twenty years ago was 66, now it is 450, and this increase is almost entirely due to the extended use of electricity for heating and power, because, although the use of electricity for lighting purposes has increased, the efficiency of the electric lamp has increased also, and the amount of current consumed in lighting is thought not to be appreciably greater. The Committee repeats the conclusion reached by many predecessors when it expresses the opinion that the domestic chimney is responsible for a large proportion of the London fog. Nearly five million tons of coal are consumed annually in London for domestic purposes. The remedy suggested is that steps should be taken to induce builders to fix types of grates which will be effective for warming and yet in large measure smokeless when burning bituminous coal, and so constructed that gas appliances can readily be fitted to them. The Committee agrees also with the opinion so often expressed in the past that the use of the old-fashioned kitchener should cease. In industrial and railway operations, plant and boilers can be so constructed and worked as to produce very little visible smoke. When an engineer is careful about the calorific value of the coal supplied to him, the conditions of his furnaces, and the methods of his stokers, he not only does not offend in the matter of smoke emission, but he works with an economy of coal consumption not otherwise obtainable. Certain observations have been made at lofty points in various parts of London, and during five periods of two hours each the total number of black smoke nuisances observed was 1,288, and of smoke not black 1,178. Serious smoke nuisance occurs at the Royal Arsenal and Dockyard, Woolwich, which is exempt from the provisions of the Public Health Acts, With the exception of nuisances from rail and road locomotives, the dilatory machinery of the Public Health Acts has to be employed in dealing with offences. The Committee considers that if the smoke nuisance is to be effectually prevented progressive penalties must be provided for offences. It suggests certain lines along which local authorities might co-operate with manufacturers and others, and generally endorses the broad and comprehensive proposals of the Departmental Committee on Smoke and Noxious Vapours Abatement. The report agrees that the problem has now become so acute that a well-thought-out and properly co-ordinated solution is manifestly called for, and that the existing law on the subject is chaotic and largely ineffective and requires codification. Local authorities are ill equipped with the necessary powers for enforcing compliance with the statutes, and there exists at present no encouragement to manufacturers and others to diminish the large volumes of smoke poured into the atmosphere. The Government is asked to introduce at an early date legislation on the lines indicated in the report of the Departmental Committee.

THE SURREY AND CROYDON VOLUNTARY HOSPITALS COMMITTEE.

IN an admirably brief document the Surrey and Croydon Voluntary Hospitals Committee has issued its report for the year 1922. After tracing the origin of the Committee to the recommendations of the Cave Report, and describing its constitution with Lord Cave himself as chairman, the report comments on the memorandum on the hospital accommodation available in voluntary hospitals of the Surrey area, drawn up by Dr. Cates at the request of the Committee. Dr. Cates, who is County Medical Officer of Health, arrived at certain conclusions which were adopted by the committee; one was that from the public health point of view the number of beds in voluntary hospitals in Surrey is insufficient, especially in the accommodation for women and children and for some special diseases; another was that piecemeal extension of small buildings not originally planned as hospitals is uneconomical and to be deprecated; and a third that medical work should be gradually concentrated in larger and better equipped institutions. General hospitals of this type are, it was considered, required in the Guildford, Redhill or Reigate, and perhaps Surbiton or Epsom areas. One of

the first steps taken by the committee was to ask all voluntary hospitals in the area to furnish their last annual report and statement of accounts, together with particulars as to the areas they serve; the request was accompanied by full information of the object and functions of the County Committee. It appeared that only nine out of thirty-two hospitals had applied for grants, and in the end it was only found necessary or possible to approve grants for four hospitals. The Surrey and Croydon Committee made suggestions to the trustees of the late Mr. Leopold Salomons with regard to the distribution of £5,000 among the hospitals of Surrey; it gave advice, at the request of the Earl of Onslow, with regard to a scheme for the extension of the Royal Surrey County Hospital at Guildford; it endeavoured to assist in a scheme for the rebuilding of the Reigate and Redhill Hospital, which came to naught owing to financial considerations; and it is pressing upon the hospitals in its area the importance of adopting a uniform system of accounts. After considering the matter of conflicting appeals for the maintenance of voluntary hospitals, the committee expressed the opinion that a Central Fund for provincial hospitals, formed on the lines of King Edward's Hospital Fund for London, would assist in the development of country hospitals on approved lines. In conclusion, the report states that the work of the committee as local advisers of the Hospitals Commission is likely to be continued throughout the current year, in respect of applications for grants towards the reduction of accumulated deficits; that it is proposed to make inquiries as to the best method of organizing systematic contributions from employers and employees; and that the question of co-operation in hospital administration and the purchase of stores is under examination. The expenses of the committee, which were very moderate, were met out of grants from the Surrey County Council and the Croydon Borough Council. The report seems to show that the Surrey and Croydon Voluntary Hospitals Committee is dealing very tactfully with a difficult problem. If other committees throughout the country are proceeding on the same lines there can be little doubt about the benefits which will accrue to the voluntary hospital system. It seems desirable that time should be given for the development of these committees on advisory lines before any attempt is made to confer upon them definite powers with regard to the co-ordination of hospitals throughout their areas. It would appear that the Surrey and Croydon Committee aims at the ideals of King Edward's Hospital Fund for London, and proposes to devote its energies to development on the lines of that excellent body.

SMALL-POX PREVALENCE.

IN the four weeks ending April 28th, 134 cases of small-pox were notified outside of London. In the successive weeks the numbers were 32, 51, 20, and 31. The counties affected were Derby with 39 cases, Gloucester 25, Lancaster 22, Nottingham 19, the West Riding of Yorkshire 17, the North Riding 5, Durham 4, and Monmouth, East Surrey, and Wiltshire 1 each. In Derbyshire, Clowne and Heanor had 17 cases each; in Gloucestershire, Cheltenham had 18 cases; in Lancashire, Nelson had 21 cases; in Nottinghamshire, Basford had 11 cases, and Stapleford 7. In the West Riding Doncaster had 10 cases, and Sheffield 2, and in the North Riding Middlesbrough had 5 cases. From the beginning of the year to April 28th the notifications numbered 652. The average for the first thirteen weeks was 40; for the four weeks of April it was 34. In reporting on the position in our issue of April 14th (p. 643) it was noted that at Clowne a prominent anti-vaccinationist had been summoned to the police court for failing to notify a case in his house, but was unable to obey the summons because in the interval he himself had been attacked by the disease and removed to hospital. The story is continued in the *Sheffield Independent* of May 1st. The clerk to the District Council of Clowne applied to the magistrates for permission to withdraw the summons, explaining that though the man was formerly opposed to vaccination he had now changed his views on the matter. The magistrates refused the application and decided that the case must go on, but allowed a month's adjournment, presumably because the converted anti-vaccinationist was still in hospital. The chairman of the magistrates made some pointed comments on the District Council's attitude in the outbreak. He said that he understood one woman who was told she had small-pox was told also to stop in the house for a few minutes until the ambulance came, but when it arrived it had to wait for three-quarters of an hour because the woman had gone out shopping! It may be mentioned that the Registrar-General's weekly returns show no fewer than 84 notifications of small-pox in Clowne from the beginning of the year to the end of April.

THE ROYAL SOCIETY'S CONVERSAZIONE.

THE first of the conversaziones, which it is the custom of the Royal Society to give every year, was held on Wednesday evening in the Society's rooms at Burlington House. The National Institute of Medical Research had a number of interesting exhibits. One of these, shown by Dr. E. H. J. Schuster, was a new recording kata-thermometer, in which the heating was carried out automatically by electricity after each cooling period, and the length of each such cooling period was automatically recorded on a roll of paper. Another exhibit from the same laboratory was that of Dr. Leonard Hill and Dr. Eidinow illustrating the lethal power of ultra-violet rays as manifested by granulation and loss of mobility in hay infusoria after exposure to the rays. A third exhibit from the National Institute embodied improvements made by Mr. J. E. Barnard and others in the method of dark-ground illumination for microscopical purposes; it was shown that a progressive increase of efficiency could be obtained by using illuminators of high numerical aperture, together with objectives corresponding thereto. Dr. Hele-Shaw, F.R.S., had on view a special laboratory filter of a simple and inexpensive type, which he called a stream-line filter, from the fact that the fluid which had to be filtered was caused to flow with a stream-line motion. The results of certain researches on the markings on the scales of herring as a means of estimating the growth of the fish were also shown, as well as some photo-micrographs of certain woods which had a peculiarly low thermal conductivity, and, from the Rothamsted Experimental Station, an illustration of the importance of the flocculation of soils. The Department of Zoology of the British Museum contributed a number of interesting African exhibits, including the contents of the stomach of a man-eating crocodile, and the modification of dentition of some African vertebrates. Another exhibitor, Mr. E. Hatschek, has succeeded in imitating organic forms by drops and vortices of gelatin. The gelatin was run into suitable coagulating solutions with the temperatures and densities so adjusted that the gelatin set to certain desired forms, and then, owing to shrinkage, a number of features like radial ribs, undulating membranes, coronated discs, and so forth, made their appearance; he had even succeeded in obtaining models astonishingly like red blood corpuscles. The research work of the Institute of Industrial Psychology was illustrated by charts showing how a study of the miner's movements in wielding the pick at the coal surface had effected an increase of about 16 per cent. in output, with lessened exertion for the miner. Another matter which appeared to be shown conclusively was that frosting the miner's standard lamp resulted in a striking reduction in the number and duration of the disturbing after-images, thus bearing out the claim of the

miners themselves that the frosted image afforded them better vision and caused less eyestrain. Another chart, which had to do with a different class of workers, showed the improvement in the work curve by introducing twice daily a fifteen minutes' period of change of work, or by encouraging rhythmical movements and reducing needless decisions. The exhibits included some examples of ancient as well as modern science. Among these were Egyptian water-clocks and some surveying instruments of the ancient Romans. The Jenner centenary found a reflection in the exhibition of the certificate of the candidature of Dr. Edward Jenner for the Fellowship of the Royal Society, a distinction he obtained in 1789.

RIVERS MEMORIAL FUND.

No one will question that the services of the late Dr. W. H. R. Rivers to the sciences in which he was particularly interested—first those of anthropology and ethnology, and later psychology—were so great as to deserve some permanent memorial. We are glad, therefore, to hear that a committee has been formed to give practical effect to a desire which has been expressed in many quarters. The committee includes Sir Charles Sherrington, President of the Royal Society, Sir Humphry Rolleston, President of the Royal College of Physicians, Sir James Frazer, Dr. Henry Head, Professor Elliot Smith, and Dr. C. S. Myers. The treasurer is Dr. L. E. Shore, St. John's College, Cambridge, to whom contributions may be sent. It is intended that the proceeds of the fund shall be devoted to the promotion of those sciences in which Dr. Rivers took a special interest, but until the amount and the wishes of the contributors are known no definite decision will be reached.

EXCHANGE PROFESSORS.

In the article under this heading published last week (p. 827) describing the visit of Sir Harold Stiles to Boston, the first paragraph was unfortunately so expressed as to produce the impression that this was the first occasion on which such an exchange had taken place between this country and America. It ought to have been stated that Professor Gask, director of the surgical unit of St. Bartholomew's Hospital, went to Boston to replace Professor Cushing in the same way last year, and that in June, 1922, Professor Cushing reciprocated by occupying the chair at St. Bartholomew's Hospital for a similar period.

THE Ontario Legislature has established a research chair for Dr. Banting, the originator of the idea that diabetes might be controlled by extracts of the islands of Langerhans, for which the name "insulin" had been suggested by Sir Edward Schafer a good many years ago, and under which it has now become a commercial product. The success which attended the inquiry instituted by Drs. Banting and Best in Professor Macleod's laboratory in the University of Toronto is now well known. The income of the chair, to which Dr. Best will act as assistant, will be 10,000 dollars a year. Dr. Banting intends to be present at the discussion on diabetes in the Section of Medicine at the Annual Meeting of the British Medical Association in Portsmouth.

THE next session of the General Medical Council will begin on Tuesday, May 29th, at 2 p.m., when the President, Sir Donald MacAlister, will give an address on the work of the Council since the November session, and penal and other matters will be considered. Dr. W. L. H. Duckworth, Reader in Human Anatomy in the University of Cambridge, has been elected the representative of the University on the Council, in succession to Professor Hopkins, who did not desire reappointment.

MEDICAL SOCIETY OF LONDON.

150TH ANNIVERSARY DINNER.

THE 150th anniversary dinner of the Medical Society of London took place at the Hyde Park Hotel on May 15th. LORD DAWSON OF PENN presided, and the principal guest was H.R.H. The Prince of Wales. About 350 sat down at the tables, and the company included:

Viscount Astor, the Bishop of Birmingham, Dr. R. A. Bolam, Sir Anthony Bowlby, Lord Burnham, Sir Archibald Garrod, Viscount Gladstone, Sir William Hale-White, Dr. G. E. Haslip, Sir Thomas Horder, Sir Robert Jones, Viscount Knutsford, Major-General Sir William Leishman, Sir William Macewen, Sir George Newman, Lord Riddell, Sir Charles Sherrington, and Mr. H. J. Waring, Vice-Chancellor of the University of London.

LORD DAWSON, in proposing the health of the principal guest, said that in addition to the representatives of medicine there were many representatives of allied professions, with varied interests and gifts, but hosts and guests alike were one in loyalty and support for their beloved Prince. In his interest in medicine the Prince was following the tradition of his great ancestors. To kings in ancient times were ascribed powers of miraculous healing. In those old days who would not have preferred the "royal touch" to the rigours of medical treatment? Imagine fourteen doctors around the bedside of Charles II! But that "royal touch" still existed. It was a human touch. It was at the service alike of the individual and of the body politic. It was prompted not by favour, but by need. It owed its success not to miracle, but to high endeavour, unfailing kindness, and a feeling for human frailty.

THE PRINCE OF WALES'S TRIBUTE TO THE GENERAL PRACTITIONER.

THE PRINCE OF WALES said that it was a common boast among members of the medical profession that they practised the oldest science known to man. He could not imagine a time when doctors had not been needed. The only reason why they were not mentioned in the record of the Garden of Eden was evidently because Eve knew the prescription, "An apple a day keeps the doctor away." (Laughter.) That evening he was a solitary and nervous patient surrounded by many of the keenest practitioners in London—an island in a sea of medicine. But as one who had had long experience of the characteristic kindness of the profession, he would be ungenerous if he did not feel himself at home. Anybody who was as familiar with hospitals as himself could not have failed to observe that the art of healing had a particularly good effect on those who practised it. He went on to pay the general practitioner a special tribute. The general practitioner was a devoted and, he was afraid, sometimes an unrecognized friend of the community. Upon him in the long run the health and well-being of the community depended. Everyone outside the profession owed the general practitioner gratitude. In referring to the presence of three distinguished physicians from the United States, His Royal Highness remarked that America was "a country to which we owe a great deal," but when the laughter had subsided he said that he was referring to medicine, not to money. One aspect of the Society's history appealed to him particularly—namely, the close connexion between the Society and the national hospital system. The Society's foundation showed that medicine at that time, in 1773, was passing from the twilight of quackery into the clear light of science. The progress during those 150 years had proceeded on parallel lines with the growth of the modern hospital system. The hospitals were at once the school and the workshop of medical science—centres to which the doctor could go to get further knowledge, and the suffering to get the practical application of that knowledge. Without the hospitals medical science would be a comparatively barren thing. The Society had grown up alongside the hospital system; many of the great London hospitals dated from about the same period, and to that hospital system the Society had been a very loyal and helpful friend.

MR. LLOYD GEORGE ON MEDICAL ACHIEVEMENT.

MR. LLOYD GEORGE gave the toast of "Medicine and the Medical Society of London," coupling with it the name of Lord Dawson. During the 150 years of the Society's existence medicine had, he said, seen great changes. It was only about forty years before the foundation of the Society that the Barbers and the Surgeons separated—a very good indication of the state of medical science at that period. The science of destroying human life had been perfected from generation to generation, but until after this Society was founded the art of saving life had hardly moved. Science had been called in to serve the purposes of destruction; but when it came to the saving of life it had been regarded too often as an intruder. Since that time, however, there had been almost incredible changes—changes which were like a romance. This later age had been the age of unlocking. It had been the age of revolution—political, industrial, scientific—and there was no profession which responded to the revolutionary spirit more readily than medicine. There was a time when the human body was like a land which was the prey of bandits—bandits roving, sulking in recesses, issuing forth to pillage and slay with impunity. The strong might resist, the weak invariably fell. Even the most expert professors of medical science had not known who these bandits were nor what measures to take to deal with them. But at length the whole dark continent of disease had been explored. These bandits had been discovered, docketed, identified, blacklisted, tracked to their lairs, and in the majority of cases exterminated for the benefit of mankind. Medical science had given human life a better fighting chance—had turned the odds in its favour for as long as the "military age" (in the medical sense) might last. These were achievements over which they had a right to rejoice. The Prince had spoken of the hospitals. Mr. Lloyd George recalled the fact that during the illness of that former Prince of Wales who afterwards became Edward VII, Sir William Gull said to the royal patient, "Sir, you are as well cared for as if you had been in a hospital." In speaking at Manchester the other evening he had occasion to remind some of his fellow citizens that when they had a good doctor they ought to be grateful to the hospitals for the training he had received, and when they had a bad doctor they ought to thank the hospitals that he was no worse! But the greatest advances in medicine were in the preventive direction. Recent history taught that it was a dangerous and costly enterprise to expel an invader once he had a grip upon the soil, and even if he was expelled he left behind a devastated area which took years to recover. But preventive medicine had put up barriers against attack. There was a good deal in the old Chinese idea of paying the doctor for as long as one was well. It was a bit of profound philosophy from a reflective race. In sanitation, water supply, food, the teaching and inculcation of habit, and above all in the housing of the people, science had exerted itself nobly for preventive ends. It was a great saying of a very great statesman fifty years ago, that the first consideration of a Minister should be the health of the people. All would remember Disraeli's famous speech in which he framed the saying *Sanitas sanitatum, omnia sanitas*. They had a right, on looking back at the triumphs of their art, as they beheld the legions of disease driven from the field, to meet in banquet and rejoice over the past, and toast the future prosperity of medicine and of the Medical Society.

LORD DAWSON acknowledged with gratitude the eloquent and impressive tribute from one so distinguished in achievement as Mr. Lloyd George. The Medical Society of London, before the end of the eighteenth century, had come to occupy a distinguished position in the world of medicine, but a study of its proceedings in that early time showed that its members were for the most part concerned with phenomena and failed to get down to causes. It had to be remembered that Darwin, Lister, Pasteur, and Koch had still to live. The watchwords of the new medicine for which the Medical Society of London stood were discovery, humanism, and statesmanship. In speaking of discovery he made a reference to the investigations which had resulted in the production of insulin. That remarkable and important achievement was the outcome of proper co-ordination between laboratory and ward. Insulin, he went on to say, had been put before the world with a restraint wholly admirable, and there was every likelihood that its ultimate value would be more and not less than appeared from the original statement. He touched also on the investigation of the scourge of cancer, and in doing so said that far too little homage was paid to those who attained only negative results. Such results were part of the pathway to truth. Medicine was a wide and open field in which all who could contribute anything were welcome, subject to the condition that only those who had had an ordained training could be accepted to take the full responsibility of the treatment of the sick. As a distinguished Frenchman had said, there were no illnesses, there were only sick people. In the practice of medicine the qualities of insight, understanding, and judgement were necessary. Uniformity was not desired, yet it was sometimes difficult to convince even well-trained minds outside the profession that medicine had no panacea, no short cut, no talisman to offer, no magic beyond that which belonged to understanding and kindness. Medicine also required statesmanship if its benefits were to be of the best use to mankind; health as a positive conception must more and more claim attention, and, in closing, he praised the public health service, which was unsurpassed by that of any other nation.

SISTER PROFESSIONS.

Sir JOHN BLAND-SUTTON, in proposing the toast of "The Sister Professions and the Guests," said that the need for professional assistance, in one form or another, belonged to the human being from the moment of his birth right to the administration of his estate after death. Medicine had its evident associations with the law; he fancied, by the way, that if some medical theories were tried by judge and jury, on the lines of law court procedure, they would not survive. Medicine had associations also with the Church, and his advice to all men newly starting in practice was to stand well with the vicar! The painter or sculptor and the doctor had this in common, that they both must have some knowledge of human anatomy and of psychology. There seemed to be considerable sympathy between art and medicine, to judge from the number of medical portraits exhibited year by year in the Academy; one which gave him great pleasure this year was that of Miss Aldrich-Blake, and the mention of her name reminded him that the Medical Society, though a progressive society, still barred its doors against women. Some medical portraits in the Academy owed their origin, no doubt, to the vanity of the sitters; others were due to the reverence of pupils for great teachers, and yet others, best of all, were tributes of affection from the artist to the doctor for service rendered.

The Lord Chief Justice (LORD HEWART), in responding to the toast, claimed for the sister professions that they were all more or less associated with the great art of healing. That was certainly true of the Church; it was true also of literature, and he believed it was no less true of the profession of the law. The business of the lawyer was not, as was ignorantly supposed, to provoke and prolong litigation, but, on the contrary, it was extraordinarily like the business of the physician, to reconcile difficulties, to heal or prevent contention, and to make the wheels of the body politic move as smoothly as possible.

Mr. NEVILLE CHAMBERLAIN, who also responded, said that he thought it necessary to state that he was now Minister of Health, because, to judge from his correspondence, a good many people still regarded him as Paymaster-General! As one who began his public work on the board of a general hospital, and who, throughout his municipal career had served on a public health committee, he was not likely to lose sight of the medical side of the work of his new office. He desired to do something towards bringing the great advances in medicine and surgery within reach of all, rich or poor, and of those who were neither rich nor poor, and whose lot in this respect was perhaps the most unfortunate of all. Though it did not seem that disease would ever be conquered, for the medical profession invented new ailments as fast as it learned to cure old ones, yet he thought they were justified in hoping that, like those mathematical problems which worked out to infinity, while they never actually achieved their end, they would advance continually towards it.

A CORONER'S ATTACK ON THE PANEL SYSTEM.

SOME remarks made by Dr. Edwin Smith, coroner for North-East London, at the conclusion of an inquest on May 11th constituted an attack on the panel system. It was a sweeping, indiscriminating onslaught, based on evidence which would not survive any serious attempt at investigation. For instance, he made the wholly unsupported assertion that there was widespread and increasing dissatisfaction among the general public with the panel system; that it was common knowledge that at a typical panel consultation the patient announces what seems to him to be his most prominent symptom and instantly gets a prescription for something supposed to fit his condition; that there is no time for any but the most perfunctory investigation and he is hurried from the surgery almost before he has entered it; that "the human machine does not lend itself to this lightning diagnosis and penny-in-the-slot style of treatment;" that a reasonable time was required, but this the patient did not get and could not hope to get under present conditions.

He roundly declared that "the panel system was a retrograde step, not too strongly described as a disastrous blunder and a miserable failure. It put a premium on scamped work and inefficiency." He wound up by making two suggestions for improvement of the system—namely, to replace the present system by one under which the doctor was paid for actual work done, and the other that the patient should be freed from restrictions both in choosing and in changing his medical attendant.

Naturally enough the coroner's remarks made in open court attracted the attention of many of the London newspapers, who dealt with them each after its own fashion.

The *Evening Standard* published an article which in moderate terms agreed with a good deal that had been said by Dr. Smith and took the view that the advent of the panel spelt the end of personal intimacy between doctor and patient and that the real issue was whether we should return to the old methods or turn our doctors once and for all into State officers. The *Daily Express* said that

> the attack "endorses a general charge that the panel patient does not receive medical attention . . . even the most conscientious doctor cannot give to every panel case the care and attention he would feel bound to exercise with a private patient." It declared that the panel system was "in theory a great advance. It brought the boon of medical science to thousands who had relied on empiricism. In practice it is not 'functioning.' That is a reason for new investigation rather than for casting the panel on the scrap-heap."

The *Daily Chronicle* declared that it was not the insurance system that was at fault but the doctor himself and ultimately the Insurance Committees. "Medicine should be like the law—just and impartial and universal. We prefer to believe that these lapses so frequently reported are due rather to overwork or accident than to lack of professional morality."

The *Daily News* took the line that Dr. Smith was exaggerating. It said:

> "The case for the present system is not that there is no bad doctoring under it or that the conditions are such as intelligent statesmanship with a perfectly free hand would be disposed to institute in a new community, but that it is a tolerable compromise between conflicting interests in an old and complex society; that it has worked, despite these exceptional cases, better than might have been expected, and that its working is being steadily improved; and that in any case it is an immense advance on the conditions which preceded it. When Dr. Smith denies this, he is merely speaking in his wrath."

It then went on to describe the conditions which existed before the Insurance Act came into force, quoting from an article by Dr. Frank Layton of Walsall, and concluded with:

> "If bad treatment is too common under the panel system it was far commoner under the only doctors whom the poor could afford in the old days; and the very poor had no doctoring at all."

The *Daily Graphic* took much the same line. It remarked that Dr. Smith's attack "constitutes a grave charge not only against the system but against the doctors who carry it out and we should be loth to think it justified in either case."

> "The panel system is far from perfect and it admittedly makes possible the scamping of work of which the coroner complains, but no profession has a higher standard of honour than the medical, and by none is that standard more conscientiously observed. But for those facts the panel system could not have been even introduced, and because of them it works in the great majority of cases to the satisfaction of both doctor and patient."
>
> "The average conscientious general practitioner who treats each case on its merits whether he is to be paid for it or not, is well enough content with a system which yields him a steady income and relieves him of the unpleasant business of extracting fees from persons ill able to afford the smallest."

The *Westminster Gazette*, in a very reasonable article, remarked that "mistaken diagnosis is not invariably due to pressure of work. It has been known even in Harley Street."

The Medical Secretary of the British Medical Association had several interviews with press representatives and, in view of the widespread publicity that had been given to Dr. Smith's remarks, issued through the Press Association the following statement:

Statement by the Medical Secretary.

The attention of the British Medical Association, which officially represents the views of doctors engaged in National Health Insurance work, has been called to the statements made by Dr. Edwin Smith, the coroner for North-East London. In the opinion of the Association Dr. Smith has abused his official position in ventilating his personal prejudices against the panel system, of which he apparently knows little. His statement amounts to an unwarranted attack upon his own profession, for the majority of general practitioners in this country are panel doctors, and if the system is as described by Dr. Smith they are acting in a manner discreditable to themselves and to their profession by taking part in it.

So far from there being "widespread and increasing dissatisfaction of the general public" with the panel system, all the evidence the British Medical Association has is to the effect that the system has greatly improved during the past two or three years, that the evidences of dissatisfaction are largely based on a few individual bad cases, and that the representatives of insured persons are of opinion that with the good will of the medical profession (which they will have) the system, which, it must be remembered, has been a great national experiment, can easily be made into one with which all concerned can feel satisfied.

Dr. Smith's statement that there is no time for any but the most perfunctory examination by the panel doctor is nonsense. The panel doctor is simply a general practitioner who happens to be doing part of his work under the panel system, and if a panel patient requires thorough examination the doctor can give it to him just as well as to a private patient—and he generally does. Dr. Smith is wrong when he suggests that the panel doctor necessarily has a very large number of cases to deal with. The average panel doctor has less than 1,000 insured persons on his list; no panel doctor in any area is allowed to have more than 3,000; and in many districts the highest possible limit is 2,500 or 2,000. There is conclusive evidence to show that the average number of attendances a year per insured person is about 3.6; therefore 1,000 insured persons would amongst them require 3,600 attendances in a year. This means that the doctor with the average list (1,000) would see about 10 insured patients every day. It will be seen, therefore, that even the small number of doctors who have the biggest lists allowed (3,000) would, on an average, not see more than 30 insured persons altogether in a day—that is, inside the surgery spread over two or three sessions, and outside visits. The picture that the coroner asks us to conjure up of the panel doctor with his crowded surgery is either drawn from his imagination or he is asking us to judge the average doctor by the few exceptions.

The only two suggestions he makes for the improvement of the service are that the doctor shall be paid for actual work done, and that the patient should be freed from all restrictions in choosing and changing his doctor. The first point has been considered by the Approved Society Consultative Council, which represents insured persons and acts as the advisory body of the Ministry of Health, and has been turned down. The second point is one which the medical profession has itself proposed to the Ministry of Health—namely, to allow the insured person to change his doctor when he likes, instead of, as at present, only having that opportunity twice a year and very seldom taking advantage of it. No doctor wants to keep a dissatisfied patient.

The Association appeals to the public to judge the panel

doctor as an average general practitioner who does good work steadily day by day which does not get into the papers.

(Signed) ALFRED COX,
May 14th, 1923. Medical Secretary.

We have received a letter from Dr. Burges, vice-chairman of the Birmingham Panel Committee and a member of the Insurance Acts Committee, in the course of which he writes:

The strictures made by Dr. Smith, the Shoreditch coroner, are by no means justified. It is a stab in the back to the 12,000 panel practitioners, most of whom are doing the work conscientiously and thoroughly. The medical profession is a noble one, and I maintain the great majority are honest. If this is so whether we work under the contract system or the private system is of no consequence—the patients will be well attended. If dishonest, again the system is of no consequence. The panel system is all to the advantage of the public; it is to the interest of the doctor to get his patient well as soon as possible, but if he is neglected he can complain, and does complain. The good work done by the many thousand panel practitioners never gets into the papers, but if an expression of opinion could be obtained from our patients themselves it would be an eye-opener to the enemies of the service. Under the panel system the patients are seen privately one by one. Some are trivial cases and require but little time—but a reassuring word from the doctor, who also is the friend of his patient, sets his mind at rest and the little ailment is not heard of again. The serious cases get the attention they require. I have been in practice twenty-five years—fifteen years before the panel and ten years as a panel practitioner. I can state emphatically the workers (and they are the panel patients) are better attended by these 12,000 panel practitioners than they were before the system was introduced. We get to know our patients better, and so can understand them better. The death rate has considerably fallen, largely due to the fact that the insured person can now go to his doctor without considering the fee. Before the panel system so many of the poor waited until they were so ill that the doctor only had a poor chance of pulling them through. My first fifteen years of practice was a nightmare to me on account of the excessive amount of night work. Now the night calls are reduced to a minimum because the patient comes before he is so ill. The first call to a patient in these years before the panel was often a night call—sometimes to a case of pneumonia of three or four days' standing and a fatal ending only too certain; at others a broken-down heart with much distress, with again no hope of pulling the sufferer through. Either case if seen sooner would have in all probability recovered. If our profession could only advertise these facts we should not get these stabs in the back from such men as Dr. Smith. Statements such as these must be refuted. It is not only the panel system that is attacked, but the whole honour of the profession.

THE PRIVATE CLINIC IN GREAT BRITAIN.

IN January, 1922, Sir Thomas Horder gave the mid-sessional address to the Abernethian Society at St. Bartholomew's Hospital on the subject of the private clinic in Great Britain. As the institution then adumbrated has now taken form, it is worth while to review the scheme set forth in the address, which has been published in pamphlet form, and to record the progress made in the development of the venture.

In his address Sir Thomas Horder recognized three types of private clinic: first, those established in connexion with general hospitals; secondly, those formed by the conversion of a large house into a nursing home with laboratories, such as Duff House or the New Clinic, Windsor; and, thirdly, "group-clinics," which have existed in the United States for some years, but at the time of the address did not exist in this country. Sir Thomas Horder suggested that the group-clinic should confine itself in the first place almost entirely to diagnosis; later, if the institution gained support, observation beds might be added or even a therapeutic institute equivalent to a large private nursing home. Three or four men of equal professional status would group themselves together, adding singly the other representative experts needed to complete the personnel of the clinic. It would, he thought, probably be found that a personnel of twelve would suffice at first, others being added as expert work in other special departments became necessary. The group thus formed would work under one roof, each member having his own consulting room and such additional accommodation as his work might require. A general secretariat would deal with all correspondence, telephoning, and record keeping, but any member would have his own private secretary if he so desired. The group ought not to be too large; the individual members should be chosen not only on account of their expert knowledge and skill in particular directions, but also with a view to their ability to work with one another. The members should have complete freedom to go outside their number for further opinions concerning their patients; and patients coming to the group-clinic should have free choice of opinions outside the personnel of the group.

The patients seen by a member of the group might be (1) patients sent for his individual examination and opinion as at present, quite independently of the group; (2) patients sent for an opinion by one of the members of the group to whom the patients had been sent individually; (3) patients sent to the clinic as such (the "group-case"); these would either pay a flat rate to include the pathological examination and any expert examinations thought to be necessary, or would be charged a reduced fee for each expert opinion given. On arrival at the clinic a patient would be dealt with by a member of the group, preferably a general practitioner, who, upon the information given by the patient's doctor, would indicate the member or members of the group whose examination and opinion seemed most essential to diagnosis. Each of these members would be able to suggest further investigations if he thought fit to do so. The member of the clinic who might take initial charge of the "group-case" would interview the various other experts, collect their signed opinions, and summarize the position in a report stating the diagnosis and the treatment indicated, which would be sent to the patient's practitioner. As all the expert members of the group would be of consultant status, no patient would be seen unless sent by his general practitioner, and no second attendances at the clinic would be permitted except at the request of the practitioner, who would be free to accompany the patient to the clinic, and suggest the consultant he desired. All the members of the group would consult together concerning difficult cases, and interested practitioners would be invited to attend. Joint reports on particular types of cases dealt with in the clinic should be published from time to time after open conference between the members of the group specially interested.

As we have said, the group form of private clinic suggested by Sir Thomas Horder has now taken shape; and on May 10th members of the Westminster and Holborn Division of the British Medical Association met there (86, Brook Street) for a discussion upon modern methods of investigation of abdominal diseases, conditions pre-eminently suitable for group examination. The discussion was opened by Sir Thomas Horder and continued by Mr. Clayton-Greene, Dr. Gilbert Scott, Dr. Joekes, and Mr. Arthur Evans, all of them members of the group. The speakers dealt mainly with the condition of chronic abdominal pain, and gave illustrations of the advantage to be derived from combining facilities for investigation under one roof, and from consultation with their colleagues in difficult cases. Subsequently Dr. Gilbert Scott gave a demonstration of *x*-ray examination with the opaque enema; and the members of the Division were able to inspect the organization of the clinic. It appears that, as Sir Thomas Horder predicted would be the case at the beginning of the venture, the number of "group-cases" seen is not very large; and the members of the group are at present chiefly occupied with their own patients.

The ground floor of the clinic contains a large waiting room for patients. On the floor above Dr. Drury Pennington, to whose exertions it is in large measure due that the scheme materialized, has his room, where he interviews "group patients" on their arrival. Each member of the group has his own consulting room, with a small dressing room attached, and accommodation for patients while waiting to see the particular consultant to whom they have been directed. On the first floor also is the *x*-ray department, and on the second the pathological department. At the present time the group consists of fourteen members; but some other experts in special subjects ("associates") are available when needed. The patients are charged a flat rate for the consultation and investigations required, but the precise amount varies to some extent according to the requirements in the way of prolonged pathological or *x*-ray examination. When the *dossier* of the case is complete, the members of the group who have been concerned in the investigation meet for discussion, and the general practitioner of the patient is invited to attend this discussion.

In his address at St. Bartholomew's Hospital Sir Thomas Horder enumerated the following cases as suitable for "group diagnosis"—chronic toxic processes, whether microbic or metabolic, arthritis and fibrositis, many gastro-intestinal disorders, and a large group of neurasthenics. He dealt also with various objections and difficulties that have been raised, or are likely to arise, in connexion with group-clinics. Thus in the United States some of the clinics are too large, so that the whole process becomes mechanical, and the patient is sent on a "circular tour" from which he emerges with a voluminous and extensive *dossier*, but with no considered judgement as to the essential nature of his malady. It has been urged also that the group system will eliminate the general practitioner; but in the opinion of Sir Thomas Horder this will not be so. Rather will the general practitioner come to regard the group as relieving him of the intolerable burden of knowing that in many cases he is not giving all the help that can be given because he has not had the expert knowledge necessary for all the investigations required for diagnosis. The objection that the group clinic must lead to unnecessary duplication of examination should not arise in practice where the members of the group work harmoniously together. The danger of the formation of cliques must be guarded against by drawing the members of a group from different schools, by making groups overlap, and by retaining power to the patient and to any member of the group to obtain outside expert opinion.

Sir Thomas Horder concludes his exposition of a very interesting experiment by expressing his belief in the "urgent desirability of great and even drastic changes in medical practice." In his opinion "our profession should take the lead, rather than be forced by the public to follow a less wise lead taken by itself, in the direction of making our art more efficient, more rational, and more attractive."

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Dangerous Drugs and Poisons (Amendment) Bill.

THE Dangerous Drugs and Poisons (Amendment) Bill was taken on report in the House of Lords on May 10th.

On Clause 2 the Earl of Onslow moved a drafting amendment in order to correct an unintended construction. As the bill stood, words in Clause 2 might be read as meaning that all offences were indictable and that the consent of the Attorney-General was required even for summary proceedings. Instead, it was proposed to begin the subsection: "Subject as hereinafter provided no persons shall, in England or Wales, be proceeded against by indictment for an offence under this Act unless the proceedings are instituted . . ." Then would follow the reference to the Attorney General or the Public Prosecutor. The amendment was agreed to.

Earl Beauchamp afterwards moved an amendment with the object of relieving the inadvertent retailer, who by a mistake of his own, or by his agent's mistake, offended against the law. There would, Lord Onslow pointed out, be great difficulties in administering the law on the lines suggested, and the amendment was negatived.

Lord Dynevor next moved an amendment to permit a pharmaceutical chemist to administer in an emergency and in good faith without any medical prescription any of the drugs to which Part 3 of the Act applied. The Earl of Onslow said that to give chemists a statutory right—for that is what it would amount to under the amendment—to administer these drugs at their own discretion would be a very serious matter indeed. It would place the chemist in a semi-medical position and would be strongly criticized by the medical profession generally because these particular drugs, especially one—cocaine—could not really be safely administered by persons who had not a medical training. The Pharmaceutical Society did not suggest this amendment nor officially support it. Any representations which might be made in regard to the regulations would, of course, be most carefully considered by the Home Office. Lord Dynevor did not press his amendment, and it was by leave withdrawn.

Two other drafting amendments were afterwards agreed to.

Vaccination and Small-pox Statistics.

In reply to Mr. T. Thomson, on May 8th, Lord E. Percy (for the Minister of Health) stated that the total number of deaths certified last year as due to small-pox was 27, but one of these cases was probably incorrectly diagnosed. Of the remaining 26 cases, 11, whose ages varied between 43 and 74 years, had been vaccinated in infancy but not since, 10 were unvaccinated, 3 showed no evidence of vaccination, and 2 were vaccinated during the incubation period of small-pox. According to the information at present available the total number of cases of small-pox occurring in vaccinated persons last year was 275, and the percentage of deaths among cases in this class, irrespective of age, was 4. The total number of unvaccinated cases, including those which showed no evidence, or were vaccinated only during the incubation period of small-pox, was 687, and the percentage of deaths from cases in this class, irrespective of age, was 2.1. Of the 26 fatal cases 24 occurred in the outbreak of virulent small-pox in London and the neighbourhood, and in this outbreak the fatality rate was 23.7 per cent. in the case of vaccinated persons and 60 per cent. in the case of unvaccinated persons.

Mr. Chamberlain, on request for a comparison of the figures of vaccination of newly born children in the years 1907 and 1921, stated that in the year 1907 10.9 per cent. of these children were vaccinated, and in 1921 the percentage was 38.3. The total number of exemptions from vaccination in 1907 was 76,709, and in 1921 it was 382,155. Figures for 1922 are not yet available.

At the instance of Mr. Becker the Minister of Health, on May 9th, gave the following particulars of small-pox cases during the last three years:

Period.	No. of Cases Notified.	Other Cases Reported but not Notified.	Cases Subsequently Withdrawn or not Regarded as Small-pox.	Net Total of Cases.
1921	343	23	30	336
1922	1,042	17	80	979
1923 (first three months)	533	5	18	520

On an inquiry as to small-pox cases in Doncaster Mr. Chamberlain said, on May 9th, that in no case had small-pox occurred in that town after recent vaccination where the interval between vaccination and the development of the disease had exceeded fourteen days, nor was he aware of the occurrence of any such case elsewhere during the past two months.

Health at the International Labour Conference.

Sir Montague Barlow, on May 9th, asked the House of Commons to approve of the policy of the Government at the third and fourth sessions, in 1921 and 1922, of the International Labour Organization, which is a development of the League of Nations; one or more conferences are held each year, and each State can have four representatives—two for the Government, one for employers, and one for workers. Draft conventions adopted are intended to be a basis for legislation in the various countries, and the recommendations approved have for their object to affirm principles to be carried out. Sir Montague spoke of the compromise in regard to the convention as to the use of white lead in painting. By this convention the use of white lead or lead sulphate in the internal painting of buildings would be prohibited, subject to several definite exceptions. The employment of males under 18, and of all females, would with certain exceptions be prohibited in any painting works of an industrial character involving the use of white lead. To enable employers to adapt processes these provisions would not apply until November, 1927. Regulations designed to be of earlier application would limit the use of white lead for painting either to a form of paste or to paint ready for use; the danger was largely ascribed to dust. Statistics of lead poisoning amongst painters would be kept. These provisions were to be applied not later than January, 1924. The compromise had been rather hastily settled, and would have to be considered further by the executive at Geneva. The Maritime Draft Convention would make compulsory, except in urgent cases, the medical examination of all children and young persons under 18 years of age employed on shipboard. The examination was to be repeated once a year. The Government proposed to introduce a bill to give effect to these provisions. For the same reasons which prompted the late Government to refuse to ratify the Washington Maternity Convention for industry generally, the Government did not propose to accept the recommendation dealing with the protection before and after childbirth of women wage-earners in agriculture. The reason was that the Washington maternity proposals affected only women who were engaged in industry. The English provisions, under the Insurance Act, affected not only women engaged in industry, but the wives of employed contributors under the Act. Further, the schemes of local authorities with State Aid Grant provided various services for all women. After considerable debate an amendment by Mr. Clynes, that the House should declare in favour of the ratification of the various conventions instead of approving of the qualified support by the Government, was rejected by 176 to 235.

Royal Army Medical Corps.—In reply to questions by Dr. F. E. Fremantle, Mr. Gwynne (Financial Secretary, War Office) said that an unsettled feeling had been caused in the army generally by uncertainty as to the future establishment and rates of pay, and by the conditions of service that had prevailed during the period of reconstruction after the war. In the case of medical officers the attractions of the civil professions had doubtless reinforced those causes. It was hoped that the army would now be able to return to normal settled conditions, and it was not proposed at present to take any special steps in regard to the Royal Army Medical Corps. He was aware that there was a shortage of candidates at the only examinations which had been held since 1914 for commissions in the Royal Army Medical Corps. This might have been due to the short notice given. It would, however, be easier to gauge the situation when the next examination, due in August, had been held. Dr. Fremantle asked also whether it was not the case that formerly it was recognized in the pay warrant that officers of the Royal Army Medical Corps, owing to their long and expensive training and their necessarily higher age on joining, could be attracted only by special conditions, including a higher rate of pay and pension than other officers, but that recent changes in the warrant had tended to abolish this differentiation, and that

sufficient increase had not been made in the pay of the Royal Army Medical Corps to compensate for the increased cost of living since the war. Mr. Gwynne said that officers R.A.M.C. still enjoyed special conditions as regarded pay and retired pay, and he was not aware that the essential financial conditions of a sound medical service for the army were absent to-day. Army pay generally was about to come under review.

Dentists Act (1921) Amendment Bill.—Lieut.-Colonel Dalrymple White, on May 9th, introduced a bill to amend the Act of 1921. The main proposal, he said, was to enable ex-service men who were unregistered dentists to enter for the qualifying examination at the age of 21 instead of 23, as laid down in the Act as the fixed age for all unregistered dentists. The number of men who would come under the provision of this bill would not be very large, but he hoped that it would be sympathetically received. The bill was given a first reading. It is backed by Colonel Sir Charles Burn, Mr. Hohler, Mr. Lumley, Sir Arthur Marshall, Mr. J. H. Thomas, and Lieut.-Colonel Lambert Ward.

Tuberculosis in Canadian Cattle.—Lieut.-Colonel Fremantle asked a question, on May 9th, with reference to the report of the medical officer of health to the Manchester Port Sanitary Authority to the effect that the first batch of Canadian cattle was not altogether free from pulmonary tuberculosis. Sir Robert Sanders said that Canadian store cattle imported into this country were not required to undergo a test as to freedom from tuberculosis. Cattle affected with tuberculosis to a dangerous degree could be dealt with under the Milk and Dairies (Amendment) Act, 1922. In reply to questions by other members he said that the general report on the cattle was that they were very healthy. He had no power to order the isolation of the cattle affected, and he did not, therefore, see that any useful purpose would be served by attempting to trace them. A notable proportion of the cattle of all countries was affected by tuberculosis, and it had been found possible to deal with tuberculosis in British cattle only within the narrow limits prescribed by Section 5 of the Act of 1922. The conditions regularizing the import of breeding animals were under discussion, and he was endeavouring to frame such regulations as would confine the admission to the high-grade stock to which alone the agreement with the Canadian representative referred. Lieut.-Colonel Fremantle inquired, on May 14th, by what pledges, if any, the Minister of Agriculture was debarred from testing imported Canadian breeding cattle for their healthiness. Sir Robert Sanders replied it was provided in Section 2 of the Importation of Animals Act, 1922, that Canadian breeding cattle could be admitted only by the authority of an order made by the Minister of Agriculture under this section; an essential condition to be prescribed in the order was the production of a certificate issued by a duly authorized officer of the Dominion of Canada to the effect that the animals were within one month before shipment effectively tested for tuberculosis and were found free therefrom.

Yaws in the West Indies.—Dr. F. E. Fremantle asked, on May 14th, what payment had been made to the medical officers in the West Indian Colonies who had carried out treatment of yaws on an intensive system during the past four years: and what saving to the revenue had been effected by closing the hospital in Grenada owing to the success of this treatment. Mr. Ormsby-Gore replied that the medical officers in Grenada undertook to perform this work without additional remuneration, but as the committee appointed to inquire into the Windward Islands medical service had recommended that some special allowance should be granted, the matter, together with the other recommendations of the committee, was receiving consideration. The Yaws Hospital was closed at the end of 1921. The cost in that year was £902, but as a certain amount of treatment was still being carried out he was unable to say what proportion of this sum represented a saving.

Colonial Medical Practice.—Dr. F. E. Fremantle asked, on May 14th, in which colonies it had recently been considered necessary to amend the ordinances regulating medical practice in order to enable persons not holding qualifications registrable in the United Kingdom to practise medicine. Mr. Ormsby-Gore said that the only three colonies in question were British Honduras, Turks Islands, and St. Vincent. His Majesty had not been advised to disallow the ordinances, but in two of the three cases the Governor had been instructed not to use the power conferred upon him without previous reference to the Secretary of State except in emergency. The Secretary of State attached great importance to the maintenance of a high standard of professional qualification in the Colonies, but he recognized that there might be circumstances in which rigid adherence to rules in force in the United Kingdom was impracticable in some of the poorer or less developed communities.

Answers in Brief.

The number of whole-time medical officers in the employment of the Ministry of Pensions is 511, of whom 374 served overseas, 104 served at home, and 33, or 6.5 per cent., had had no military service.

The gross expenditure of local authorities on tuberculosis treatment during the financial year ended March 31st, 1923, was estimated to amount to £2,813,610, exclusive of capital expenditure for which particulars were not yet available.

Instruction in lip reading is provided by the Pensions Ministry for ex-service men likely to benefit by it. After a certain amount of instruction, proficiency was entirely dependent upon regular practice, and the Minister's advisers considered that a course of twenty-five lessons afforded the man of average intelligence ample opportunity of acquiring facility in the art. Experience had shown that the unlettered man of less than normal intelligence was not capable of benefiting.

It has been decided to retain Queen Alexandra's Convalescent Centre at Saltash for a limited period for the treatment of neurasthenic pensions patients.

England and Wales.

Bacteriological Department, Newcastle.

The new building of the Bacteriological Department of the University of Durham College of Medicine, Newcastle-upon-Tyne, will be opened on Friday, May 25th. The visitors will be received by the president of the College of Medicine, Sir David Drummond, in the King's Hall, Armstrong College, at 4.30 p.m., and Sir Frederick William Andrewes, M.D., F.R.S., will give an address at 5 p.m. Afterwards the building will be open for inspection.

Liverpool Open-air Hospital for Children.

According to the report for 1922 of the Liverpool Open-air Hospital for Children, Leasowe, Cheshire, the income for the year amounted to £25,414, nearly all of which was received in grants from the Liverpool Corporation, the Lancashire County Council, and other public bodies; the expenditure for the year, including extraordinary expenditure, amounted to £25,443. Dr. Hartley Martin, the senior medical officer, in his report on the results obtained from treatment in the hospital as deduced from the state of health of the cases discharged during the year, said that of the 186 cases discharged, 20, or 10.7 per cent., were non-tuberculous. Of the 166 tuberculous cases discharged, 134, or 80.15 per cent., were discharged with the note "disease quiescent"; as 12 cases were removed by their parents before the completion of treatment, and 2 cases were transferred on account of infectious disease, the figure which represented the results achieved in all cases treated to completion was 88.15 per cent. The percentages showing the results achieved from Liverpool cases only were 85.5 and 93.9 per cent.; this is held to show the advantage of working in close conjunction with the tuberculosis dispensaries and the hospital out-patients' departments, so that cases were admitted as soon as diagnosed and in many cases for diagnosis. Owing to the cloudy summer of 1922, the usual routine exposure of the children to sunlight could not be practised and the marked improvement in the health of the children which followed this exposure could not be achieved. This partly explained the reason for a falling off in the number of cases discharged, the children being retained in hospital for a longer period than usual. The same cause interfered with the work of investigating the blood response to sunlight, which had been begun during the summer of 1921; it was then observed that the phagocytic power of the blood, as indicated by the differentiated nuclear leucocyte count, was improved as the result of exposure to sunlight, and that the health of the child improved *pari passu* with this. An attempt was made during the winter months to produce this result by exposure to radiant heat, but the results achieved were not satisfactory.

Ambulance Arrangements in London.

In view of reports in certain newspapers to the effect that undue delays sometimes occurred in the arrival of ambulances to carry urgent cases in London, and of questions in Parliament (see, for instance, JOURNAL, April 7th, 1923, p. 606), the Metropolitan Asylums Board, has issued a report on the ambulance service it provides in London. It has 107 motor ambulances and omnibuses, accommodated at six ambulance stations in different parts of London, and a large repair dépôt at Fulham. The primary function of the Board's ambulance service is the removal of cases of infectious disease in the metropolis, but patients are also removed to the other institutions of the Board for tuberculosis, sick and convalescent children, and mental deficients. Apart from this work the Board's ambulance service has been largely utilized for the removal of non-infectious cases from private houses to hospitals, for which service a fee is charged (ten shillings a journey within the administrative county of London, with an additional charge when a nurse is supplied). In 1922, out of a total of 51,767 removals, 33,679 were to the infectious and 4,807 to the non-infectious institutions of the Board, and 13,281 were removals from home to hospital, infirmary, or elsewhere, or return journeys. In 1906 a departmental

committee was set up by the Home Secretary, to inquire as to the provision made for dealing with accidents and sudden illnesses in the streets and public places of London, and two of the three members of the committee reported that the most efficient and economical plan would be an extension of the non-infectious system of rapid ambulances initiated by the Metropolitan Asylums Board. In 1913 the London County Council invited the Board to prepare a scheme of co-operation with it and other metropolitan authorities for the establishment of a street accident ambulance service, but the scheme was not accepted, and in 1915 the County Council set up the existing street accident ambulance service. The present position is that the London County Council has a free ambulance service to deal with street accident cases, while the Metropolitan Asylums Board has a service which deals with removals to infectious and other hospitals and is able and willing to deal with removals of all kinds, other than street accidents.

The City of London Truss Society.

The 113th annual festival of the City of London Truss Society was held at the Abercorn Rooms on May 8th, when the Lord Mayor of London presided, supported by the Sheriffs. The Lord Mayor mentioned that since its foundation the Society had been the means of affording relief to 6,706,000 persons suffering from hernia. Every patient attending at the institution was seen by the surgical staff. A stock of about 2,000 trusses was kept on the premises, but there were as many as eight or ten cases a day in which the ordinary truss would not prove efficient, and in those cases special instruments were ordered. The ages of the patients treated by the Society varied within the widest limits; the youngest on record was an infant 7 days old, and the oldest a woman of 105! Mr. Sheriff Studd acknowledged the indebtedness of the institution and its beneficiaries to the surgical staff, and Mr. G. L. Keynes, surgeon to the Society, responded. Mr. Keynes said that the professional knowledge and skill now available for these ruptured patients were of a very high order, but this was not due to the special genius of himself or of his colleague, Mr. R. Coyte, the assistant surgeon; it was due to the fact that they had one hundred years of that institution's experience to draw upon—an accumulated experience unique in this country. The necessity for trusses was not as great as formerly, but the fact was that a large residue of older persons could not be treated by operation. The number of special trusses now provided was about a thousand a year and showed a tendency to increase.

Scotland.

New Regulations for Meat Inspection.

Important regulations have been issued by the Scottish Board of Health with a view to securing uniformity of meat inspection. They are dated April 20th, 1923, and are entitled "Public Health (Meat Inspection) Regulations (Scotland) 1923," and have followed upon an inquiry which began in 1914, when the Board instructed one of its medical officers, Dr. Gerald Leighton, to investigate the question of establishing a uniform system and standard of meat inspection for Scotland. The inquiry was resumed after the war and three committees of experts assisted in the investigation. The most important provision in the regulations is Article 4, which provides for a system of detention and seizure of unsound meat. Certain officials with sufficient training and experience, who, in general, will be certificated sanitary officers, to enable them to recognize any departure from the normal in a carcass, are to be entrusted with the work of a primary inspection and power to pass carcasses which are obviously sound, and to detain all carcasses that show any departure from the normal for final judgement by the qualified meat inspector. The latter will be a veterinary surgeon or medical officer of health. There will thus be two grades of officials concerned in meat inspection known respectively as the detention officer and the meat inspector. The Board of Health recognizes that the inspection of carcasses in private slaughterhouses, especially in widespread rural areas, is one of great difficulty; it considers that the best measure which can meantime be taken is to regulate the days and hours during which slaughtering may take place in each slaughterhouse and to arrange that a detention officer shall visit each slaughterhouse as often as possible during the times so fixed. An emphatic opinion is, however, expressed that private slaughterhouses should be abolished, and replaced by public abattoirs owned and controlled by the local authority. In the case of carcasses of bovines slaughtered for emergency reasons, such as sickness or accident, the Board recommends that very careful inspection should be made by a veterinary surgeon or the medical officer of health. The Board does not consider a distinctive mark upon the carcasses passed as fit for food absolutely necessary, except in the case of such as are sent from the area of one local authority into that of another. Attention is drawn to a very undesirable practice said to be increasing in some towns—namely, the practice of hawking meat from baskets, barrows, or small carts. Such meat is probably uninspected, is of doubtful origin, and is specially liable to contamination by dust, handling, and unsuitable storage of unsold meat overnight. This matter is controlled by registration of meat sellers under Article 10. The registration of places of cold storage, and the inspection not only of meat, but of meat products and game stored in them, is controlled by Article 11 of the regulations. The question of *ante-mortem* inspection of animals consigned for purposes of food also forms matter for a recommendation; in some districts a veterinary surgeon attends all sales of fat stock and in this way diseased animals are often detected; if they are subsequently transferred from the area of one local authority to that of another, the latter should be notified of the fact.

Glasgow Medical Lunch Club.

The thirty-seventh meeting of this club was held on May 10th in Ferguson and Forrester's restaurant, when the President, Dr. W. L. Reid, occupied the chair, and a very representative gathering of members attended to welcome as their guest of honour Sir Samuel Chisholm, Bt., who almost a quarter of a century ago was Lord Provost of Glasgow. In his address after lunch, Sir Samuel harked back to the year 1900, when during his term of office small-pox broke out in the city and rapidly became epidemic. Apart from the danger which thus threatened the population, an international exhibition had been arranged for the following year, and over half a million pounds had been raised as a guarantee fund. It was clear that the success of the venture would be seriously jeopardized unless the epidemic could be arrested. He described the excellent work done by the medical profession of the city in conjunction with the sanitary authorities in the thorough revaccination of the inhabitants. A large and well organized band of trained vaccinators was sent to the different areas of the city, particularly to slum districts, model lodging houses, and police courts. Thanks to the energetic measures adopted, and to the thorough co-operation of the medical profession, the epidemic was arrested. The city was thus not only freed from the epidemic, but the systematic revaccination of almost the entire population conferred upon the inhabitants a large measure of immunity against future attacks. He appealed to the medical practitioners of to-day to emulate the good work of 1900, and to strive to maintain the health of the city at a high standard. The Vice-President, Dr. John Henderson, expressed to Sir Samuel the thanks of the members for his presence and for his interesting address.

Institutional Treatment for Mental Defectives.

The Edinburgh District Board of Control is purchasing Gogarburn House for the Edinburgh Town Council for the purpose of institutional treatment of mental defectives belonging to the Edinburgh Lunacy District. The property, which is an old mansion standing in grounds, was acquired by the town council some years ago as a convalescent home for the treatment of children under the maternity service and child welfare scheme. It has now

agreed to accept the offer by the Lunacy Board of £11,500 for the property, which represented what they had paid for purchase and alterations.

LEGACIES IN AID OF EDINBURGH BLIND.

At a meeting of the managers of the Edinburgh Royal Blind Asylum intimation was made of two legacies from the estate of the late Mrs. Sara Phyllis Katherine Duncan, one of £400 to the institution and one of £600 to the Blinded Soldiers' and Sailors' Hostel, Newington House, Edinburgh. A legacy to the Blind Asylum of £1,000 by the will of the late John A. Forrest, W.S., was also intimated.

Ireland.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

THE Royal College of Surgeons (Ireland) presented recently the following address to Mr. T. M. Healy, Governor-General of the Irish Free State:

"May it please your Excellency,—We, the President, Vice-President and Council of the Royal College of Surgeons in Ireland, wish to greet you on your appointment as the first Governor-General of the Irish Free State, and to express the earnest hope that your tenure of that high office may be both long and prosperous, and rendered illustrious by the establishment of peace and prosperity within the border of the Irish Free State.

"Since its foundation, in 1784, to the present date, the College has endeavoured to discharge its functions with efficiency and as an educational body to fulfil its duties and obligations to the country. Its Fellows and Licentiates are found on the staffs of nearly every hospital in Ireland, and many hold leading positions in the great medical and scientific institutions in the Colonies abroad.

"We can assure your Excellency that the services of our College will on all occasions be placed loyally and wholeheartedly at the disposal of the Government of the Irish Free State wherever questions arise affecting the public health or the welfare of the people."

The Governor-General, in reply, said:

"Mr. President and gentlemen of the Royal College of Surgeons in Ireland,—Your greetings on my appointment as the first Governor-General of the Irish Free State afford me great pleasure. They come at a moment when it seems possible that tranquillity may be re-established within our borders. Surgeons, no doubt, gain experience in warfare, but they can profit only by a guarded peace. Your College has, as an educational body, discharged splendid functions. Nearly every hospital in Ireland, and many abroad, have been strengthened by the attainments and zeal of its Licentiates and Fellows.

"Irish surgeons are justly esteemed for their skill, originality, and courage wherever they practise. Medicine, leechcraft, and inoculative science daily win fresh triumphs over disease. The knowledge which is yours may, therefore, be regarded as the treasure house of the community.

"I thank you for the assurance that your services can be counted on by the Irish Free State, to aid it in preserving the public health and welfare of the common people."

The members of the deputation representing the College were: Sir William I. de C. Wheeler, president; Mr. R. C. B. Maunsell, vice-president; Sir Lambert Ormsby, secretary; Sir Thomas Myles, Sir Arthur Chance, Sir Conway Dwyer, and Mr. Alfred Miller, registrar.

The deputation afterwards had luncheon with the Governor-General.

SALARIES OF MEDICAL OFFICERS.

A deputation of the dispensary medical officers in the Connemara district recently waited upon the Co. Galway Central Hospital Committee and presented the following statement as to the inadequacy of their present salaries:

"The Connemara doctors are at present very badly off financially; many are in debt, and their heavy travelling expenses swallow up almost their entire income. Their work has been increased by the abolition of the district hospitals, and they have received nothing to make up for the increased cost of living; the salaries paid are lower than those paid in the eastern part of the county, lower than those paid in other parts of Ireland where good private practice is to be had. Private practice is nil in some parts of the county, and doctors have to travel vast distances, often up to 200 miles a week, to attend to dispensary patients. Connemara is a hotbed of tuberculosis, typhoid, and typhus, and many doctors have lost their lives in the course of their duty. The salaries paid are lower than the wages of a tradesman, and the net salaries, after deducting expenses, are often less than that paid transport union labourers. A good shop assistant or a country council clerk would refuse to work for the small remuneration paid.

"Suggestions: (1) That a salary of £350 rising to £500, together with actual travelling expenses, should be paid; (2) that all dispensaries should be graded; (3) that appointments to the better-class districts should be filled by the promotion of doctors from poorer areas."

The Chairman said that all the Committee could do was to make a recommendation to the Board of Health. It seemed to him that the only way to deal with the salaries was to fix a flat rate. The Government ought to be asked to do in Ireland what the British Government had done in the Highlands and Islands of Scotland. After the application of the medical officers was fully discussed the Hospital Committee made the following recommendation to the County Board of Health: That the salary should be £300 per annum with annual increments of £5 until a maximal salary of £350 is reached; the annual increments to be applied retrospectively. The Committee decided to take no action with regard to the second and third recommendations put forward by the doctors as to the grading of the districts for the purpose of promotion. The County Board of Health has adopted a flat rate of £300 per annum for all the dispensary doctors in co. Galway, including those in the Connemara area.

The Ministry of Home Affairs (Northern Parliament) has informed the Ballymoney Board of Guardians that after careful consideration of the report of the inspectors—Mr. Robinson and Dr. Patrick—the Ministry is satisfied that the salaries of the medical officers of the union are too low, having regard to the service rendered by the medical officers, the cost of living, travelling expenses, and to the salaries paid in other unions of similar character. The Ministry, having reviewed all the circumstances, considered that it would not be justified in prescribing a new scale of salary, and that it was better to pay medical officers a fixed salary instead of a scale salary, and that the amount should be such as to offer reasonable remuneration for the work required. Having regard to all the circumstances, they thought that £225 would be a reasonable salary to pay in Ballymoney Union, except in Portrush district, where, as the work was not so heavy as in other districts, £200 per annum would be sufficient. The Ministry proposed to fix the salaries of these officers at these figures, but before making an order desired to afford the guardians an opportunity of paying their medical officer at the rate specified, so obviating the necessity for an order. The Ministry considered that the revised salaries should have effect as from October 1st, 1922.

Correspondence.

TREATMENT OF PUERPERAL INFECTIONS.

SIR,—The question of the best method of dealing with puerperal infections is of the deepest concern to every practitioner in the kingdom. Professor Watson's interesting communication should be reviewed in conjunction with the discussion which followed the reading of his paper (BRITISH MEDICAL JOURNAL, March 24th, 1923, p. 505; discussion, p. 511). In the last sentence of his reply to the discussion Professor Watson says, "If in the meantime death occurred it was due to bacteriaemia, which would only have been aggravated by interference." This is surely the acme of advanced obstetric thought, but conveys no practical help to the general practitioner. The same comfortable scientific cloak may adorn the mind of the practitioner who allows a gangrenous appendix to kill his patient. We may well ask if this conforms to present-day surgical principles. The discussion, as published in the BRITISH MEDICAL JOURNAL, was of great interest and deserves close study; while most of the speakers agreed to some extent with Professor Watson's ideas, their words contain faint praise for treatment based upon the retention of foreign decomposing matter in the uterus.

I have been engaged in general practice for just over a quarter of a century, and for many years have sufficiently enjoyed the confidence of my colleagues in neighbouring towns and villages to be asked to share their anxieties and responsibilities in these distressing cases. The treatment I adopt is based on the principles I saw carried out in the Rotunda under the mastership of Dr. Purefoy, while studying for the L.M. The results in my last seven cases are of some interest. Five of the practitioners who

sought my aid sent for me as soon as they found conditions abnormal, and the five cases were removed to my wards in the Dumfries and Galloway Royal Infirmary, and treated under as careful and thorough technique as we carry out in our routine for abdominal section. They all recovered. In two cases manipulation had been undertaken before I was called in; one case had been curetted, both had been douched. My treatment in these two cases was carried out in the homes of the patients on similar lines to those I adopt in hospital practice, but there can be no comparison. Home treatment is a very poor substitute. Both cases were late cases and both died. I would like to ask Professor Watson if I am justified in drawing from his paper the conclusion that he would regard these two cases as having been aggravated by the treatment we adopted. The conclusions I myself draw are, that if any form of manipulation is to be undertaken it must be early and under hospital conditions.

During the war I had a priceless experience as officer in charge of the surgical division of the 21st General Hospital. I there had the opportunity of observing closely the work of several well known surgeons. We received cases from various casualty clearing stations. Many wounds had been "bipped." From one casualty clearing station the results, where this treatment was adopted, were uniformly good, but had we based our opinion on cases drawn from other sources I fear we would have arrived at the conclusion that this form of treatment was futile. Results depend, not on the method, but, if I may so put it, on the method of the method.

We groan to-day under a multiplicity of methods of treatment in all branches of surgical practice, and the tendency of teachers is to overlook the fact that it is the laborious, often wearisome, attention to apparently trivial details which brings success in individual cases and which, if followed in every midwifery case, would render puerperal sepsis rare. We in country areas, who drink from many fountains, cannot but be surprised that a new well of knowledge has been tapped. The waters are bitter; we are asked to throw over the methods of treatment taught us by those whose memory we revere, and who claimed for their treatment reasonably good results, and which in our own hands have proved satisfactory. I would not myself quarrel with the use of a blunt curette in those cases, although I prefer gauze, but I very often do quarrel with the method in which the curette is used. The curette must at all times be used with great delicacy and restraint.

Dr. Dudley Boswell's reference to his cow which calved, and what I see in this rural area, suggests that the cow is much more tolerant of puerperal infection that the human female. If this is an accepted view, would it not be advisable, in preparing serums for those conditions, to obtain them from the cow's blood? The mare, I think (but my experience is very limited), is very much less tolerant. Professor Watson has placed us under a deep obligation in bringing before us so stimulating a paper. If there is any golden thread to which we may cling for guidance, it is, "Don't let sepsis occur."—I am, etc.,

GEORGE R. LIVINGSTON, M.D., F.R.C.S.Ed.

Dumfries, May 8th.

CATGUT OR SILVER AS SUTURE FOR VESICO-VAGINAL FISTULA.

SIR,—In your issue of May 12th (p. 834) Dr. Blair Bell writes with reference to a report of the Gynaecological Congress in Edinburgh in your issue of May 5th, which, as he says, is "a perfectly accurate one."

This is what this report says: "He [Dr. Blair Bell] did not claim to cure every case, however, as Dr. Herbert Spencer said could be done if silver wire were used." There is not a word in the report about Dr. Blair Bell's having cured his cases after two or three attempts, nor am I reported to have stated that these cases could always be cured at the first attempt by silver wire, a statement which I have never made. It was Dr. Blair Bell's admission of failure and my not knowing then that he had cured the cases at the second or third attempt which led me to remark that in my opinion they could all be cured by the use of silver wire, passed by means of a hollow needle.

I brought the subject of silver wire before the Congress in the hope that it might enable members, as it has enabled me—after the failure of catgut in most experienced and skilful hands—to rescue a patient from the consequences of such a mode of treatment as had been adopted by a surgeon in Dr. Haig Ferguson's most instructive case.

Dr. Blair Bell is quite right in supposing that I should regret any misunderstanding, and I hope this statement will make the position clear.

In all my operations for vesico-vaginal fistulae silver wire has been used, and—with the exception of one case in which a recto-vaginal fistula and a vesico-vaginal fistula occurred as a result of a too successful removal of cancer by radium—every case has been cured, though not always at the first attempt.

In view of the statement in your report that "he did not claim to cure every case," I ask Dr. Bell if he has cured every case of vesico-vaginal fistula he has operated on by means of catgut.

Dr. Blair Bell says that the use of silver wire is a retrograde step. A little retrogression from ground liable to infection with tetanus (as catgut is) has its advantages. Within the last few days I have seen two gynaecologists who have lost three patients from tetanus owing to the use of catgut, and the colleague of one of them had lost another patient from the same cause. There is no such risk with silver wire. In my opinion it is more scientific to use silver sutures, which are removed, than to leave in the bladder buried stitches of any material whatever. Of course, in any operation the technique must be good to secure success.—I am, etc.,

HERBERT R. SPENCER.

London, W., May 12th.

PERNICIOUS ANAEMIA.

SIR,—In the JOURNAL of April 28th (p. 743) Dr. Knyvett Gordon takes Dr. Coates to task for publishing as pernicious anaemia a series of cases which included examples of sprue, etc. Dr. Coates seems to pin his faith to the "idiopathic" criterion of what shall and what shall not be called "pernicious" and will thus, if he is not wary, be one day defeated by a case of bleeding piles. For Dr. Knyvett Gordon the criterion of perniciousness is "a lethal change in the bone marrow" and this, he says, must be accompanied by persistent presence of megaloblasts in the blood, free iron in the liver, etc. He further seems to suggest that these changes are non-specific and may be grafted on to any kind of anaemia as a terminal event. His remarks are addressed to the subject of what facts must be demonstrated to "establish a *pathological* diagnosis of pernicious anaemia" (the italics are mine).

I wish, on behalf of the poor clinician, to take the gravest exception to the suggestion that the establishment of a particular form of end-process, admittedly common to various clinical conditions, by the pathologist gives him the slightest right to limit the use of such well recognized clinical terms as "pernicious anaemia."

If the term "pernicious" must be used, I submit that it must be used as a clinical term and applied to the syndrome with which it is already associated. This syndrome has many features, not all of which are present in every case—for example, glossitis, gastric and intestinal symptoms, combined degeneration of the cord, etc. Except that there is present an anaemia of haemolytic type, and this can be discovered by suitable examination of the blood, urine, etc., we have no haematological criterion of value in diagnosis. This type of anaemia is not by itself absolute evidence since it occurs in a variety of other conditions. Diagnosis is to be made by careful consideration of the whole of the symptoms, any one of which may be found in other cases, although there is no other disease which presents them in the same grouping. This, I believe, is the general opinion of clinicians, but we are apt to have set against it the suggestion originating on the Continent that there is something characteristic in the blood picture and so constant that without it pernicious anaemia cannot be said to exist. The argument is even taken further; I do not say that Dr. Knyvett Gordon would do so, and it is asserted that such blood changes connote pernicious anaemia and nothing else. It is time that we ceased to have two meanings current

for this one term; it is time that the careful but brilliant work of Wm. Hunter should be allowed to dominate that of the specialist on blood pictures. I accept Dr. Knyvett as well qualified to speak from the pathologist's point of view, and should like to ask him the following questions:

1. Is the so-called "megaloblastic degeneration" a degeneration, and, whether it be so or not, can any particular factors which determine its development be specified?
2. Is it common to several disease processes or peculiar to one?
3. Can a diagnosis of "pernicious anaemia," carrying with it the usual significance of an inevitably fatal outcome, be made from a blood film alone?

—I am, etc.,

Sevenoaks, April 30th. GORDON WARD.

CANCER OF THE BREAST.

SIR,—There are many debatable points raised in Mr. Cecil Rowntree's lecture on cancer of the breast, published in the BRITISH MEDICAL JOURNAL, May 5th, 1923, and the section devoted to early diagnosis is rather disappointing. He rightly points out that the usual textbook description of a hard irregular mass infiltrating the breast, causing retraction of the nipple, and accompanied by enlargement of the axillary glands, need not concern us. But what sign does he offer the student on which to found his diagnosis of early cancer? A slight dimpling of the skin! Surely when a cancer is capable of "diagnosis" from its clinical signs it has long passed its early stage. A surgeon may guess correctly the nature of a small tumour of the breast, but is guessing scientific? It has been estimated that clinicians are unwilling to commit themselves to a diagnosis in over 20 per cent. of breast neoplasms. In these circumstances, what is a surgeon to do with these cases? Is he to take away a small piece of the neoplasm and await the pathologist's report, and submit the patient to a second operation? Is he to remove the breast? Is he to perform the major operation? Or is he to rely on the opinion of the pathologist from a frozen section at the time of the operation? The last method of procedure if reliable would certainly be the best for the patient and the surgeon. But Mr. Cecil Rowntree tells us that he has never been able to convince himself of the value of rapid frozen sections.

Dr. Ernest H. Shaw, who has practised the frozen section method for over twenty-three years, says[1] he has attended as pathologist to assist in 382 clinically doubtful tumours of the breast in the practice of a large number of surgeons, most of whom are well known. Further on in the same paper he writes of the pathologist who practises the frozen section method of diagnosis. "He (the pathologist) must be able to give a definite opinion as to whether the case he is dealing with is malignant or not. The surgeon expects a quick and definite report on which the fate of an important organ or even a limb often depends. I have made it a rule to have paraffin sections prepared of all my cases, and am pleased to be able to record that in every instance the pictures seen in the permanent sections have agreed exactly with those made immediately at the operation."

Again, Dr. W. C. MacCarty[2] writes, "It is unfair to perform a radical operation on the mammary gland in doubtful cases, but that it is fair with our present knowledge to remove a sector of the gland-bearing structure for immediate examination."

It is quite true that a pathologist, to be of immediate value to the surgeon, requires long training both in the macroscopic and microscopic characters of neoplasms. Pathologists make mistakes, but the cancer problem is to be faced scientifically; all methods available must be used at the earliest opportunity and in the early stage of cancer before it is capable of being clinically diagnosed. The immediate frozen section method in competent hands will be found a valuable agent in the fight against cancer. It certainly appeals to me as the reliable, sane, and scientific method of to-day and should certainly be more extensively used. It is the method capable of guiding the surgeon in the choice of operation and the only method calculated to save the patient the distress and inconvenience of a second operation.—I am, etc.,

London, W., May 7th. W. H. MCKINSTRY, M.D.

[1] Lancet, vol. 1, 1923, p. 218.
[2] *Collected Papers of the Mayo Clinic*, May, 1922.

RESTORATION OF THE HEART BEAT.

SIR,—With reference to the letters from Sir James Mackenzie (April 21st) and Dr. Harrington Sainsbury (May 5th) it may be of interest to refer to some recent observations I have made on the effect of adrenaline on the lower rhythmic centres of the human heart. A variable time after the hypodermic injection of 7 to 10 minims adrenaline chloride (1 in 1,000, Parke, Davis and Co.), it was found that pressure over either right or left vagus, by depressing the sinus rate, allowed a new slow rhythm to appear, which started in the auriculo-ventricular node or below this. The new rhythm was maintained for a variable number of cycles, according to the duration of the vagal stimulation, until the sino-auricular node escaped. This result has been attained in twelve observations made on seven subjects.

In the case of the apparently arrested heart, such a new rhythm once aroused would presumably continue and maintain a sufficient circulation to allow the normal pacemaker to recover and resume control of the heart's rhythm.—I am, etc.,

Hull, May 12th. E. E. LASLETT.

INSULIN AND DIABETES MELLITUS.

SIR,—I refrained from replying to Dr. Cammidge's letter in your issue of May 5th thinking that someone with more experience would explain that it is not possible at present to assert how far permanent benefit may accrue to diabetics from the administration of insulin.

I am in agreement with Dr. Cammidge in so far as to have made it a rule to explain to patients that when one embarks upon a course of insulin it may be necessary to continue it indefinitely. This incidentally adds great difficulty to its use in hospital. Personally, I do not treat patients in hospital with insulin unless I am satisfied that they will be able to obtain a supply after leaving. It is too cruel to let an individual learn that there is some substance which will allow him to live in comparative comfort, but because he has not money to buy it he must perish miserably. Some fund should be started to supply poor people with insulin: the State should not supply it. The administrators of the fund might stipulate that those whom they assist to pay for insulin must have no progeny: the State could not make this stipulation, and without it the diabetic population would increase, because the tendency to diabetes mellitus is undoubtedly hereditary. In the past the multiplication has been checked automatically, because a man suffering severely from diabetes is impotent, whilst a woman, even if she conceive, rarely bears a living child.

In spite of this, the data at our disposal at the moment do not allow us to conclude that cure does not occur. Rest is the greatest healer: poor nutrition is his greatest antagonist. In the past the islets of Langerhans could be rested only by fasting. Rest could only take charge of the patient accompanied by poor nutrition. We have reasons to believe—although we have no proof at the moment—that now we may be able to rest the islets whilst feeding the patient, so long as we give sufficient insulin to maintain a slight hypoglycaemia. All those who have had some little experience with insulin have met cases in which either the diet could be increased or the amount of insulin diminished after a few weeks' treatment designed to prevent any hyperglycaemia. In my opinion at the present time it is the duty of any practitioner who diagnoses diabetes mellitus, and has reason to believe that the onset of the disease is quite recent, to make arrangements for his patient to be treated with insulin without any delay. Many have designed and are carrying out experiments to estimate the improvement of the glycopyretic function of diabetics following a course of insulin.—I am, etc.,

London, W., May 11th. O. LEYTON.

STERILIZATION OF THE UNFIT.

SIR,—In answer to the letter of Mr. Havelock Ellis, I may say that I quoted at length the Indiana law to show how much care was taken before the operation of sterilization was performed. He says that there never seems to have been any such law in Utah, but I have before me a summary of sterilization laws published in the *Journal of Criminal Law and Criminology*, a copy of which I was unable to obtain, but which is to be found in the International Clinics for 1920. Some may have been cancelled even since then. Therein I find:

"Utah has also passed a law similar to those cited. In most of these laws provision is made for severe penalties for those who perform the required operation for improper purpose."

My paper had for its object only the sterilization in our own country of the unfit, which, considering the enormous influence of heredity, would prevent the advent of mental defectives; and a State certificate of marriage, which, if effectively carried out, would tend to diminish the risk of infection by the *Spirochaeta pallida*, the gonococcus, and tubercle bacillus, for, should either be present, marriage could be postponed until health was established. There is no opposition to marriage in health. No legislation can prevent promiscuous intercourse, with its attendant risk.

It is evident that although Mr. Havelock Ellis approves of "a measure so excellent as eugenical sterilization, and so certain to be eventually recognized in general medical and surgical practice," he does not care for laws; but I hope that, at any rate in this country, should the operation ever be allowed, it will only be through legislation, and not "with the written consent of the relatives without reference to any law." The councillors of Utah would not be the only ones to be obliged to make provision for severe penalties when the operation was done for an improper purpose.—I am, etc.,

London, S.W., May 14th. R. A. GIBBONS.

SIR,—Dr. R. A. Gibbons is reported (p. 760) as saying that "four children to a marriage were necessary to continue the State in view of the fact that some would die before maturity and some would not marry." I beg to point out that it was stated in *La question de la dépopulation*, by M. Leroy Beaulieu, that in 1901-1905 the average number of children per family in France was 2.5, that in 1906-1911 it was 2.32, and that in 1911 it was 2.18. Yet the population in France continued until the war to increase, by excess of births over deaths, at its usual rate of about one per thousand a year.—I am, etc.,

London, S.W., May 14th. B. DUNLOP.

INTRATHECAL INJECTIONS OF TRYPARSAMIDE.

SIR,—My attention has been arrested by a statement in the paper "The Treatment of Trypanosomiasis," by Marshall and Vassallo, in the BRITISH MEDICAL JOURNAL of February 10th, 1923, to the effect that I advocate the local or intrathecal injection of tryparsamide in the treatment of sleeping sickness. I desire to point out to your readers that I have never advocated this method of treatment and, indeed, with our present knowledge of tryparsamide, regard it as unnecessary.—I am, etc.,

New York City, May 7th. LOUISE PEARCE.

AN international exhibition of hygiene will be held at Strasbourg in commemoration of Pasteur from July to October, consisting of the following sections: (1) Bacteriology and parasitology, including tropical diseases, and diseases of animals and plants; (2) chemistry, and chemical industries, antiseptics, etc.; (3) general hygiene; hydrology, climatology, thalassotherapy, gymnastics; (4) public health questions in schools, the army, navy, colonies, out-patient departments, factories, etc.; (5) hospitals and insurance; (6) statistics and demography; (7) municipal hygiene, including building, ventilation, lighting, water supply, baths, parks, drainage, etc.; (8) food hygiene; (9) refrigeration industry; (10) agricultural hygiene.

Obituary.

GEORGE HALIBURTON HUME, M.D.EDIN., D.C.L.DUNELM., F.R.C.S.EDIN.,

Consulting Surgeon, Royal Infirmary, Newcastle-on-Tyne.

BY the death, on May 8th, of Dr. G. H. Hume at the age of 77, Newcastle-upon-Tyne has lost a distinguished surgeon and a man held in very high esteem. For the last year or more he had been in indifferent health, and had led a semi-retired life. Dr. Hume had outlived most compeers whose acquaintance he made when he came to the city half a century ago.

He was born in Kelso, graduated at the University of Edinburgh in 1867, and continued his studies in Berlin and Vienna. His introduction to Newcastle occurred through a partnership with the late Mr. Septimus Rayne, then well known as the city police surgeon and as medical and surgical adviser to the North-Eastern Railway Company. At this period—the early seventies—Dr. Hume engaged in general practice and rapidly rose to be one of the most successful medical practitioners in the North of England. When, in 1875, the partnership was dissolved, Dr. Hume felt himself free, not only to occupy the post of surgeon to the infirmary, but gradually to devote himself more and more to surgery, for which he had a marked inclination. His surgical work was good. Speaking as a physician of a surgeon whom I have seen frequently operate, Dr. Hume, owing to his neat-handedness, seemed to excel particularly in small but delicate operations, in the performance of which patience and the taking of pains are so essential. A careful observer of disease and an attractive bedside teacher, he was a safe guide for students to follow.

For a few sessions Dr. Hume lectured on physiology in the School of Medicine in Neville Street. He possessed just that type of mind and love of the recondite facts of physiology and pathology which, with his gift of clear exposition, made him one of the most respected of lecturers. He was a man of great literary taste, of refinement and culture. Didactic and concise, his style and mode of expression made him an interesting and attractive speaker in medical societies and elsewhere.

When the British Medical Association met in Newcastle in 1893 he was invited to give the address in surgery. Choosing for his subject the evolution of surgical principles, he dwelt upon the rapid strides surgery had made under the Listerian treatment of wounds, and how the art of surgery had improved as its science had broadened. He wrote a history of the Royal Victoria Infirmary, and on the occasion of the opening of the institution by the late King Edward, His Majesty graciously accepted a copy of the book.

Dr. Hume's wife died several years ago, and his youngest son was killed in the recent war. He is survived by two sons—both well known in the medical profession—and by four daughters.

His body was laid to rest in St. Andrew's Cemetery on May 10th. The funeral was attended by a large gathering of colleagues and members of the medical profession, and by many old patients. T. O.

We are indebted to Mr. H. BRUNTON ANGUS, Professor of Surgery in the University of Durham College of Medicine, for the following tribute:

By the death of George Haliburton Hume, M.D., D.C.L., F.R.C.S.Edin., Newcastle-on-Tyne has lost a man of striking personality. Sprung from a Border yeoman stock, educated at Edinburgh University, he settled in Newcastle-on-Tyne, where he was fortunate in being appointed at an early age to the surgical staff of the Newcastle Infirmary. Never of robust physique, such was his devotion to work that he built up a large practice and also conscientiously fulfilled his duties to the hospital. As a surgeon he was characterized by the thoroughness and care which he devoted to his work. A very efficient operator, he shone by the soundness and excellence of his judgement. He had a keen critical mind which never lost sight of the best interests of his patients. The public were quick to discover

this trait and few men in Newcastle-on-Tyne have ever enjoyed such implicit confidence. As a teacher he was gifted with a lucid style and fluent speech; drawing from his rich experience he held the close attention of his students. Outside of professional matters his balanced judgement made him a trusted adviser and friend. He was a refined, scholarly man, a great student of history and a brilliant conversationalist. His *History of Newcastle Infirmary* is a worthy monument to his literary ability and love of historical research. Of a retiring disposition, he never sought public notoriety, but to those who enjoyed the privilege of his friendship he was a charming companion.

A strong family man, his later years were darkened by the death of his wife and the loss of his youngest son, who was killed in the great war. These were blows which he felt deeply, but he bore them with the same unfaltering courage that he displayed when his own health failed. His last two years proved a severe trial; conscious of his steady decline, with mind clear even to the last week of his life, he neither complained nor repined but faced the inevitable with sublime heroism.

ARTHUR LOOSS, PH.D.,

Formerly Professor of Parasitology, Cairo.

WE learn with regret that the distinguished helminthologist, Dr. Arthur Looss, died after a long illness on May 4th, at Giessen. Dr. Looss was born on March 16th, 1861, at Chemnitz, where his father was a works director. He received his early education in his native town and at Lodz in Poland. In 1880 he matriculated at the University of Leipzig as a student of natural science, and attended the lectures of Professors Crednen, Haeckel, and Hoffmann, and worked in the laboratories of Professors Leuckart, Schenk, Wiedemann, and Dr. Fraine. In 1885 he received the doctorate of philosophy for a thesis on the Trematodes.

For some years he lectured in Leipzig, and later on was sent by Leuckart to Egypt to investigate the transmission of bilharzia. Failing to implicate the molluscan fauna in the spread of the disease he arrived at the conclusion that infection took place directly from man to man through the skin. During the inquiry Looss studied also the development of *Ankylostoma duodenale*, and accidentally infected himself. This led to his remarkable series of observations which demonstrated for the first time that infection takes place through the skin, and that the larvae there are carried to the heart and lungs, finally reaching the alimentary canal from the trachea. The two volumes on the anatomy and life history of the hookworm published by Looss in the records of the Government School of Medicine show him at his best as a most detailed and accurate observer, as well as a highly skilled artist. His other contributions to medical helminthology comprise briefer but equally masterly descriptions and illustrations of *Heterophyes heterophyes*, *Trichostrongylus subtilis*, *Filaria loa*, and *Schistosoma japonicum*. His monograph on the *Sclerostomidae* of horses has proved to be one of the most important helminthological contributions to veterinary science. Loss's predilection lay, however, with the trematodes, and the series of monographs on the classification of the distomes, beginning in 1899, completely revolutionized the basis of classification of this group. For many years Looss was professor of parasitology and biology at the School of Medicine in Cairo, where he lectured with remarkable lucidity and earnestness to the Egyptian students in their first year of medical studies. It was not until some time after the outbreak of the world war that his professorial duties were suspended. With the entry of Turkey as an ally of Germany he was permitted to retire from his chair and return to Germany. Separation from his library and collections, and the crushing sorrows which fell upon his friends and country overcast the last years of his life, which were quietly spent in teaching at the University of Giessen. In spite of a peculiarly dogmatic manner and an acrid controversial style which brought him into conflict in turn with Railliet, Stiles, Manson, Leiper, and Sambon, Looss was in private life a man of simple and lovable character, and one who had many friends of many nationalities, for he was an accomplished linguist. Helminthology and philately were his hobbies. Twice he visited England, on the first occasion to receive the Mary Kingsley medal of the Liverpool School of Tropical Medicine. His second visit took him to Cambridge, where an extended tour of the colleges was arranged for him. After viewing three he pathetically appealed to his host with the remark, "Ach, they are all the same, now show me some worms." This single-minded absorption in a field of study which at one time many considered to be exhausted has won for Looss an imperishable name, and placed upon humanity a debt which posterity must eventually acknowledge.

WE regret to record the premature death, on April 21st, after an operation, of Dr. S. JERVOIS AARONS, of 17, Harley Street. Dr. Aarons was Australian by birth, and was educated at the Universities of Sydney and Edinburgh; he was a popular president of the Union at Edinburgh. He graduated M.B., C.M.Edin. in 1895, and M.D. in 1897, and became M.R.C.P.Lond. in 1904. After having been house-surgeon in the gynaecological wards of the Edinburgh Royal Infirmary, and tutor in midwifery and gynaecology at the Edinburgh Extra-Mural School, he settled in London, and held the appointments of pathologist and registrar at the Hospital for Women, Soho Square. At the time of his death he was gynaecologist to St. Anthony's Hospital, Cheam. Dr. Aarons was a man of brilliant personality and kindly nature; he was perhaps best known for his work on sterility, on which subject he wrote in the *Index of Treatment*. He was the author of a small book on *Gynaecological Therapeutics*, a volume of modest aims but of real practical value, and he also contributed many articles to the literature of gynaecology.

Universities and Colleges.

VICTORIA UNIVERSITY, MANCHESTER.

THE Earl of Crawford and Balcarres has been nominated Chancellor of the University, in succession to Viscount Morley, who has resigned on the ground of advancing years. Lord Crawford is the head of the house of Lindsay, has been a Cabinet Minister, and is trustee of the National Gallery and the National Portrait Gallery.

Professor J. S. B. Stopford has been appointed Dean of the Medical School as from September next, in succession to Professor R. B. Wild.

A ceremony for the conferment of medical degrees will be held on Saturday, July 14th.

UNIVERSITY OF SHEFFIELD.

MR. ERNEST FINCH, M.D., M.S.Lond., F.R.C.S.Eng., has been appointed to a lectureship in surgery.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN extraordinary comitia of the Royal College of Physicians of London was held on Thursday, May 10th, at 5 p.m., the President, Sir Humphry Rolleston, being in the chair.

The following gentlemen, elected to the Fellowship at the last comitia, were admitted as Fellows:

Richard Hingston Fox, M.D.Brussels, John Porter Parkinson, M.D.Lond., Donald George Hall, M.D.Camb., Wilfrid Stephen Fox, M.D.Camb., Frank Edward Tylecote, M.D.Manch., John Owen, M.D.Lond., Leonard Gregory Parsons, M.D.Lond., John Parkinson, M.D.Lond., Alfred Hope Gosse, M.D.Camb., Philip Henry Manson-Bahr, D.S.O., M.D.Camb., Sir Hugh Kerr Anderson, M.D.Camb., Byrom Bramwell, M.D.Edin.

A communication was received from Dr. J. J. Perkins, resigning his examinership in medicine as from July next.

A report was received from Dr. Drewitt, who represented the College at the bicentenary of the death of Sir Christopher Wren. The thanks of the College were conveyed to Dr. Drewitt by the President.

Dr. Edwin Goodall was appointed a representative of the College at the University of Wales, vice Dr. H. W. G. Mackenzie, resigned. A vote of thanks was accorded to Dr. Mackenzie for his services.

An address to his Royal Highness the Prince of Wales, President of St. Bartholomew's Hospital, on the occasion of the 800th anniversary of its foundation, was sealed.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council was held on May 10th, when Sir Anthony Bowlby, President, was in the chair. Diplomas of Membership were issued to 150 candidates recently found qualified. Twenty candidates were found qualified for the Diploma in Public Health, in conjunction with the Royal College of Physicians. (The names were published in the report of the comitia of the Royal College of

Physicians, May 5th, p. 792.) Ten candidates were found qualified, in conjunction with the Royal College of Physicians, for the Diploma in Tropical Medicine and Hygiene. (The names were published in the report of the comitia of the Royal College of Physicians, May 5th, p. 792.)

Mr. Hugh Lett was elected a Member of the Court of Examiners.

A letter was read from the Clerk of the Barbers' Company stating that, subject to the consent of the Royal College of Surgeons, the Thomas Vicary lecture should be continued for a further period of five years.

Medical News.

THE subject selected for Sir John Bland-Sutton's Emeritus lecture at the Middlesex Hospital Medical School, on June 5th, is the choroid plexus and ventricles of the brain as a secreting organ.

THE Cavendish lecture of the West London Medico-Chirurgical Society will be delivered by Dr. Henry Head on "Speech and cerebral localization" on June 22nd, at 8.15 p.m., at Kensington Town Hall. The annual dinner of the society will be held at the Monico Restaurant on June 19th at 7.45 p.m., with Dr. A. G. Wells, President, in the chair. Further particulars and tickets may be obtained from Dr. Guy Chambers, 101, Goldhawk Road, W.12.

THE twelfth biennial Huxley lecture, on recent advances in science and their bearing on medicine and surgery, will be given at the Charing Cross Hospital Medical School by Professor Sir Arthur Keith, F.R.S., on Wednesday, June 27th, at 3 p.m. The chair will be taken by Dr. William Hunter, C.B., and admission will be free without ticket.

A GENERAL meeting of the Medical Society for the Study of Venereal Diseases will be held at 11, Chandos Street, W.1, on Friday, May 25th, at 8.30 p.m. Sir Thomas Horder will give an introductory address on metastatic gonorrhoea, and Sir William Willcox will open a discussion on gonococcal arthritis.

SIR ROBERT ARMSTRONG-JONES, M.D., will deliver the Gresham lectures on physic at the Gresham College, E.C., on May 22nd, 23rd, 24th, and 25th, at 6 p.m. each evening. The subject will be medical hydrology and hydropathy, with special regard to the climate of health resorts in England and Wales. The lectures are free to the public.

WE are asked to state, with reference to the special course of medical hydrology arranged by the University of London Extension Board (see JOURNAL, April 28th, p. 735), that medical students are invited, without fee, to attend the whole course, and medical practitioners to attend the two opening lectures, on May 29th, at the University of London, South Kensington.

A MEETING of the Medical Officers of Schools Association will be held at 11, Chandos Street, W.1, on Tuesday, May 29th, at 5 p.m., when Dr. Alice E. Sanderson Clow will read a paper on the effect of physical exercise on menstruation.

THE University of Glasgow proposes to confer its honorary degree of LL.D. upon Dr. Graham Lusk, professor of physiology in Cornell University, and not as previously announced.

THE Llandrindod Wells Open Medical Golf Challenge Cup was played off on May 2nd, 3rd, and 4th. In the semi-finals Dr. J. C. Hunot (8) beat Dr. D. Evans (10) 3 and 1; Dr. D. Saunders Jones (9) beat Dr. A. Davies (6) 5 and 4. In the finals Dr. D. Saunders Jones beat Dr. J. C. Hunot (the winner last year) 6 and 5. Lady Mayo Robson presented the cup and replica. The competitors were entertained to luncheon at the Golf House by the local committee. Toasts were proposed and responded to by Dr. Evans (Pennard), Dr. Baird (St. Leonards), and others, who all spoke highly of Llandrindod Wells and its facilities for various treatments.

THE examination of the Central Midwives Board for Scotland, held simultaneously in Edinburgh, Glasgow, Dundee, and Aberdeen, has just concluded. Out of 95 candidates who appeared for the examination 87 passed. Of the successful candidates 27 were trained at the Royal Maternity Hospital, Edinburgh; 20 at the Royal Maternity Hospital, Glasgow; 3 at the Maternity Hospital, Aberdeen; 9 at the Maternity Hospital, Dundee; 7 at the Queen Victoria Jubilee Institute, Edinburgh; 4 at the Cottage Nurses Training Home, Govan, Glasgow; and the remainder at various recognized institutions.

THE annual summer meeting of the Medical Golfing Society will be held at Addington (by kind permission of the Addington Golf Club) on Thursday, June 14th. Entries, with lowest handicap, must be sent to the honorary secretary, Dr. Rolf Creasy, jun., 25, Devonshire Place, W., on or before Monday, June 11th. The entry must be accompanied by the annual subscription of 10s., if due. All medical men on the *Medical Register* are eligible for membership of this society.

THE Fellowship of Medicine have arranged a further series of post-graduate lectures, open to members of the profession, to be given by kind permission of the Royal Society of Medicine, at 1, Wimpole Street, W.1. The opening lecture on Wednesday, May 30th, at 5.30, will be given by Mr. Ernest Clarke on tips in ophthalmology for the general practitioner, and others will follow by Mr. R. A. Hendry, Mr. James Berry, Sir Sydney Russell-Wells, Sir Henry Gauvain, Mr. Harold Chapple, and Mr. H. S. Souttar. Copies of the complete programme will be forwarded on application to the Secretary to the Fellowship of Medicine, 1, Wimpole Street, W.1. A course of eight practical lecture-demonstrations on gastro-intestinal diseases of children will be given by Professor Sir William Bayliss, Dr. Bernard Myers, and Mr. E. T. C. Milligan at the Children's Clinic, Western General Dispensary, Cosway Street, N.W.1, from Monday, June 11th, to Thursday, July 5th. The fee for the course is £1 1s., or lectures can be taken singly, if desired. Copies of the syllabus can be obtained from the Secretary to the Fellowship of Medicine, 1, Wimpole Street, W.1. The lectures will be delivered at 5 p.m. on each day.

THE societies engaged in the educational health and food campaign organized by the Bread and Food Reform League, in association with other scientific and sociological societies, have asked the Minister of Health to receive a deputation which desires to direct attention to the importance of introducing legislation to notify and limit the presence of preservatives in food, and to urge the necessity of publishing educational leaflets giving information about healthy and economical foods.

AT the solemnity in the hospital square on Tuesday, June 5th, during the celebration of the 800th anniversary of St. Bartholomew's Hospital, the musical arrangements will be under the supervision of Lieut.-Colonel J. Mackenzie Rogan, C.V.O., who has composed fanfares for trumpets and drums specially for the occasion; these will be played by the Coldstream Guards band. The band of the Welsh Guards will play a selection of music.

A COURSE of eight lectures on surgery will be given by members of the staff in the London Hospital Medical College, commencing on May 25th at 4.15 p.m., when Mr. Russell Howard will lecture on the testicle. The course is intended for senior students and post-graduates.

THE eighth French Congress of Legal Medicine will be held in Paris from May 24th to 26th under the presidency of Dr. Pierre Parisot. MM. Courtois-Suffit and Giroux will introduce a discussion on the international regulation of the sale of cocaine. There will be discussions also on industrial diseases, on the identification of blood, and on injuries to the vertebral column. A special meeting of the French Society of Legal Medicine will be held on May 26th, and a discussion will take place on the declaration of deaths in France.

A CRICKET match will be played at Brentwood on June 20th, at 2.30 p.m., between the Essex Doctors and the Southend Doctors. Any Essex medical man who would like to take part in the match should communicate with Dr. Horace E. Haynes, Littleton Hall, Brentwood, Essex.

DR. T. S. HIGGINS, M.O.H. St. Pancras, and Dr. J. SPENCER LOW, a medical officer of health of the Ministry of Health, have been elected Fellows of the Royal Sanitary Institute.

THE next examination of the Dental Board, which will be held in Edinburgh on July 6th and 7th, in Manchester on July 18th and 19th, and in London on July 26th and 27th, affords the last opportunity for those persons entered under Section 3 (2) of the Dentists Act, 1921, to present themselves, unless they be entered as war service candidates. Notices have been addressed to persons whose names are entered on the list. Any eligible person who has not received such a notice should communicate with the Secretary for Examinations, Dental Board, 44, Hallam Street, London, W.1.

THE annual medical dinner for Southampton and district, the fourth of the series, was held on the night of Wednesday, May 9th, at the South-Western Hotel, Southampton, and was well attended by the doctors residing in the town, and even from so far afield as Botley and Romsey. After the toast of "The King," the chairman, Dr. Farquharson, made a reference to the late Dr. Purvis, whose memory was honoured, standing and in silence, by the company. A musical programme was supplied by Mr. Leonard Munn, who kept the audience interested and amused for over an hour with a varied programme of songs, stories, and piano. Several items were also given by Dr. Hamilton, whose splendid voice was very much appreciated, and a very entertaining evening was brought to a close at 10.45 p.m. by the singing of "God Save the King."

MESSRS. WILLIAM HEINEMANN (Medical Books) LTD., have in the press *Aromatics and the Soul*, by Dr. Dan McKenzie, M.D., and *The Hygiene of Marriage*, by Mrs. Hutton, M.D., with a preface by Professor A. L. McIlroy.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocera, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"R. W. S. C." gave up his practice at the end of March or beginning of April, 1916, subsequently earned a few fees as locumtenent, and joined the R.A.M.C. on September 7th, 1916. He has recently received an application for payment of £21, income tax assessed on his earnings as for the year 1916–17.

*** Provided the assessment was made by April 5th, 1920, the tax is legally recoverable. But it may be assumed that the authorities would be willing to make any adjustment necessary to bring the amount down to a proper figure. "R. W. S. C." should therefore ask for full particulars as to the precise amount of income assessed and supply a statement of the fees earned by him from April 5th, 1916, to September 7th, 1916. He might also take steps to ascertain what was his assessable military pay and what allowances were made to him when that was assessed to tax, as there may be some balance of allowances to be set against the assessment on the civil earnings.

"SENEX" is in receipt of retired pay from the Government and income from various taxed and untaxed sources. He has been medically advised to reside on the Continent, and inquires what abatement he would receive if he left the United Kingdom and established his ordinary residence abroad.

*** He would be entitled to exemption from tax on income not arising from this country and on interest from most of the war issues—for example, 5 per cent. War Loan. On the other hand, the allowances which he receives at present would be restricted to the proportion which his liable income would then bear to his total income.

"A. B." has an income of £500 a year, all of which is taxed at its source. How will he benefit by the £225 allowed him?

*** Taking the year 1922–23 as an example, he is entitled to repayment of

£225 at 5s.	£56	5	0
£225 at 2s. 6d.	£28	2	6
	£84	7	6

He can claim repayment of this amount through the inspector of taxes for the town in which he resides, on the usual official form of claim which the inspector will supply on request.

LETTERS, NOTES, ETC.

TREATMENT OF DIABETES.

DR. C. MUTHU (Mendip Hills Sanatorium) writes: I am glad Dr. Cammidge, in your issue of May 5th (p. 787), has raised a note of warning with regard to "optimistic forecasts" of insulin in the treatment of diabetes. May I relate my experience during my recent visit to India? I had the privilege of seeing and examining 5 cases of diabetes in different parts of India which were cured by simple fasting. One of these cases was a medical man practising in Nepal, who fasted the first week, taking nothing but butter milk, and during the second, third, and fourth weeks fasted two days a week and reduced his diet on the other days to a fourth of what he took before. At the end of the month he completely recovered and was none the worse for his fasting experience. I am sure that diabetes, at least in India, is due to an over-indulgence of rich foods and to an excessive meat diet with little or no exercise whereby the gastric organs—the liver and pancreas—get overworked and fatigued; and the abstinence from food gives them time to recover their exhaustion and renew their normal metabolism. I have seen other cases besides diabetes do well by fasting treatment. I myself got rid of commencing dysentery by fasting two days and taking nothing but orange juice. I saw a case of paralysis agitans in a fat purdah lady in whom both her weight and the tremors of head and hands were considerably reduced on a diet of nothing but oranges. Another case was a lad of 14 with a voracious appetite who got rid of his asthmatic attacks when his diet was considerably reduced and his bowels attended to. There is no doubt that civilized man, by over-indulging in eating and drinking and thus overworking his digestive organs, invites diseased conditions, and that in partial or strict fasting and regulation of diet the medical profession has a simple but efficient remedy in the treatment of diabetes and many another disease.

THE INFLUENCE OF INTESTINAL BACTERIA UPON THE THYROID GLAND.

"K." writes with reference to Dr. Harries's paper on disease of the thyroid gland (BRITISH MEDICAL JOURNAL, March 31st, p. 553): I had a case regarded as early exophthalmic goitre by a consultant and another doctor. Laboratory reports on specimens of urine were: first, "indican—a trace"; secondly, "indican—none." After four weeks of the usual treatment, without improvement, the patient was put on thyroid, 1 grain daily, tincture of iodine, 5 minims thrice daily, and decided improvement ensued. The question arises as to what other conditions are associated with absence of indican in the urine, interfering with its utility for diagnosis and prognosis in exophthalmic goitre.

THE DETERMINATION OF LABOUR.

DR. HEYWOOD SMITH (Chichester) writes with reference to the discussion on the legal period of gestation before the Medico-Legal Society on April 17th (BRITISH MEDICAL JOURNAL, April 21st, p. 691): Is not the menstrual cycle the determining factor in the calculation of the commencement of labour? I used to calculate for my patients that labour was due at the beginning of the tenth "period," reckoned from the first day of the last menstruation, and it usually proved correct within a week. For instance, if the last "period" began on January 1st, labour was due on September 10th, and would probably take place before the 17th. May I draw attention to a mistake that is not infrequently made by authors of communications in using the word "pubis" instead of "pubes"? "Pubis" is the genitive case.

CUPPING.

DR. J. R. KEITH (Driffield) writes: In the interesting communications which have appeared recently in the JOURNAL with regard to cupping I see no reference to a very effective and easy method of carrying it out—namely, the vacuum glasses which have been devised by A. Bier and R. Klapp for the treatment of various inflammatory conditions. These glasses, which were originally manufactured by Eschbaum of Bonn, may now be obtained from makers of surgical instruments in this country. A convenient glass to use is one 2½ inches in diameter, which, held in position by an assistant, is exhausted by the operator by means of a suction pump which is connected with the glass by a short piece of rubber tubing.

CORRECTION.

DR. D. MONTAGUE B. SNELL calls attention to an error in the qualifications printed after his name in the JOURNAL of May 12th (p. 809 and Contents page). For M.R.C.P. read L.R.C.P.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 30, 31, 34, 35, and 36 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *207*.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line	0	1	6
Whole single column (three columns to page) ...	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, W.C.2, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.